

Service Manual

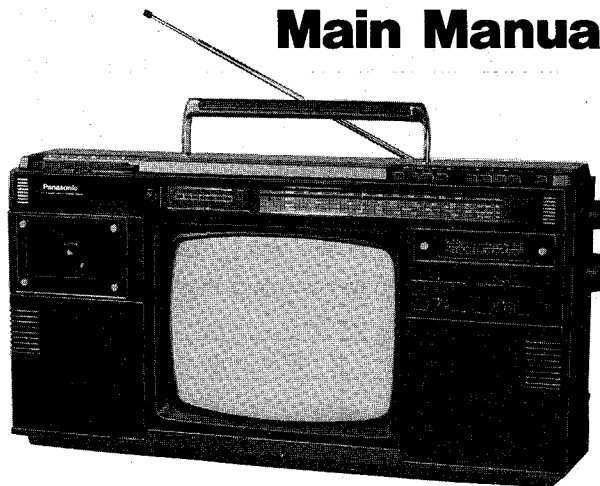
Black and White Television with Stereo Radio Cassette

TR-1230X

Chassis Model No. 12B01-A/E

Chassis Family No. 12B01

Main Manual



Specifications

Television

Power Source: AC: 120/220/240V, 50/60Hz, DC: 12V
Power Consumption: AC: 50W, DC: 19W
Antenna Impedance: VHF/UHF/FM/SW Monopole antenna 75Ω
 VHF/UHF/FM/SW External antenna 300Ω
Receiving Channels: VHF: USA 2-6, 7-13
 CCIR 3-4, 5-10
 Italian C, Gch
 UHF: USA 14-83ch
 CCIR 21-69ch
 UK 21-69ch

Intermediate

Frequency: Video: 45.74MHz
 Sound: 41.25MHz (USA)
 40.25MHz (CCIA/EUR)
 39.75MHz (CCIA/UK)

Integrated Circuit: 13
Semiconductor: 30 Transistors
 55 Diodes
 1 H.V. Rectifier
Nominal Anode

Voltage: 14.0KV (Zero Beam Current)
Picture Tube: 310JHB4, 12 inches, 90° Deflection
Speaker: 2-Way 4-speakers System

Woofer: 12cm x 2
Tweeter: 3cm x 2
Automatic Circuits: Peak Automatic Gain Control
 Saw-Tooth Automatic Frequency Control
 Automatic Voltage Regulator

Dimensions: Height: 32.6cm
 Width: 64.3cm
 Depth: 32.1cm

Weight: 12.2kg

Stereo Radio Cassette

Motor: Mechanical governor motor
Frequency Response: 80Hz - 15KHz
Recording System: AC bins with 45.5/47.5KHz
 (Beat Proof Selector)
Operation: Push button one-touch operation
 with Auto-Stop and mechanical
 pause
Tape Speed: 4.8cm/s. (1-7/8 ips.)
Program Time: 1 hour with C-60 cassette tape
Fast Forward and
Rewind Time: Approx. 120 seconds with C-60
 cassette tape
Track System: 4 track 2 channel stereo recording
 and playback
Input: MIC: sensitivity 0.25mV/applicable
 microphone impedance
 200-600M (L&R)
 LINE IN: 420mV/50KΩ (L&R)
 LINE OUT: 380mV/47KΩ (L&R)
Output: EXT Speaker terminal: 8Ω (L&R)
 REMOTE: for manual start and
 stop
Radio Frequency
Range: FM 87.5-108MHz
 LW 145-285KHz
 MW 530-1605KHz
 SW 5.9-18.0MHz
Sound Output: 5W + 5W (Max.)
Accessories: Car Batter Cord (TSX8365)

Specifications are subject to change without notice.

Panasonic®

Matsushita Electric Trading Co.
 P.O. Box 288, Central O

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. It is advisable to insert an isolation transformer between the television set and the ac power line before servicing the chassis.
2. In servicing, pay attention to the original lead dress, especially in the high voltage circuit. If a short circuit is found, replace all parts which have been overheated as a result of the short circuit.
3. After servicing, observe that all the protective devices such as insulation barriers, insulation papers, shields, isolation and R-C combinations, are properly installed.
4. Before turning the receiver on, check the resistance between the B+ line chassis ground. Connect \ominus side of an ohmmeter to B+ line and \oplus side to ground. Each line should have more resistance than specified below.

B+ line	Minimum Resistance
+11.5V	34 Ohms

5. When the TV set will not be used for a long period of time, unplug the power cord from the ac line outlet.
6. Potentials as high as 14.0 kV are present when this receiver is operating. Operation of the receiver without the rear cover on involves a danger of shock. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment. Always discharge the anode of the picture tube to the receiver chassis before handling the tube.
7. After servicing make the following leakage current check to protect the customer from a potential shock hazard.

LEAKAGE CURRENT COLD CHECK

1. Unplug the ac cord and connect a jumper between the two prongs on the plug.
2. Turn on the receiver power switch on.
3. Measure the resistance value with an ohmmeter between the jumpered ac plug and each exposed metallic part such as screwheads, antennas, control shafts, handle bracket, ect. When the exposed metallic part has a return path to the chassis, the reading should be 1.8 megohm to 4.0 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity.
4. Remove the jumper from the ac plug.

LEAKAGE CURRENT HOT CHECK

1. Plug the ac cord directly into the ac outlet. Do not use an isolation transformer during this check.
2. Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15 μ F capacitor between each exposed metallic part and a good earth ground like a water pipe as shown in Fig. 1.
3. Use an ac voltmeter with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Move the resistor connection to each exposed metallic part and measure the voltage.
5. Reverse the polarity of the ac plug in the ac outlet and repeat the above measurement.
6. The potential must not exceed 0.75 volt rms, from any exposed metal part to ground.

If in case any of the measurements exceed the limits specified, there is a possibility of a shock hazard and the receiver should be repaired and rechecked before it is returned to the customer.

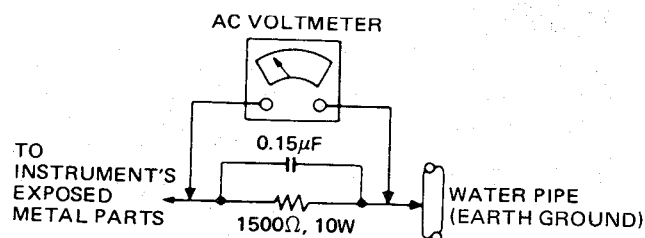


Fig. 1

X-RADIATION

WARNING: The potential source of X-Radiation in TV sets is the picture tube.

NOTE: It is important to use an accurate periodically calibrated high voltage meter.

1. Turn the Brightness control fully counterclockwise.
2. Measure the High Voltage. The high voltage meter should indicate a nominal 14.0kV and the maximum of 20.5kV. If the upper meter indication exceeds the maximum level, immediate service is required to prevent the possibility of premature component failure.
3. To prevent the possibility of X-Radiation it is essential to use the specified picture tube.

DISASSEMBLY INSTRUCTIONS

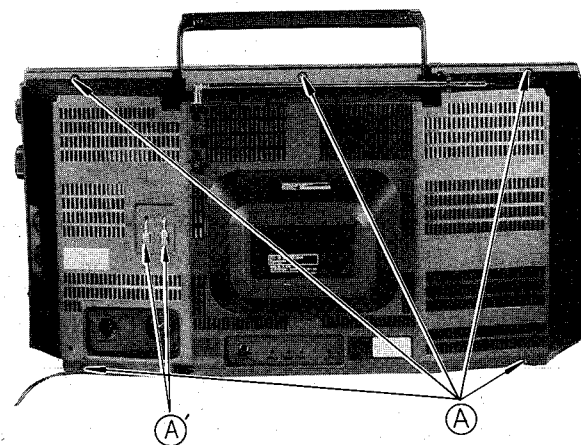


Fig. 4

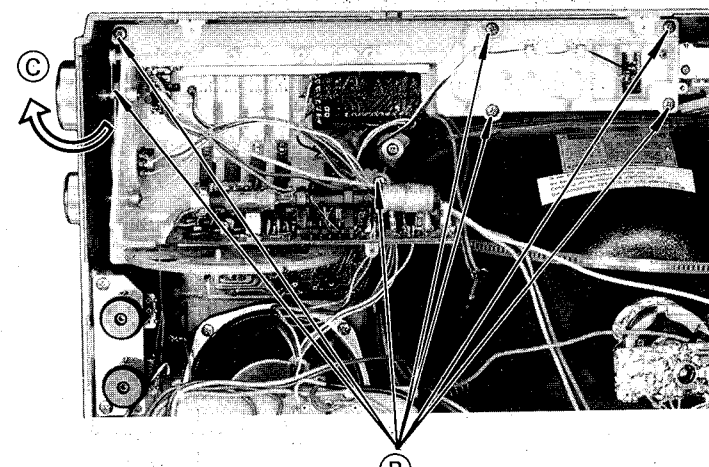


Fig. 5

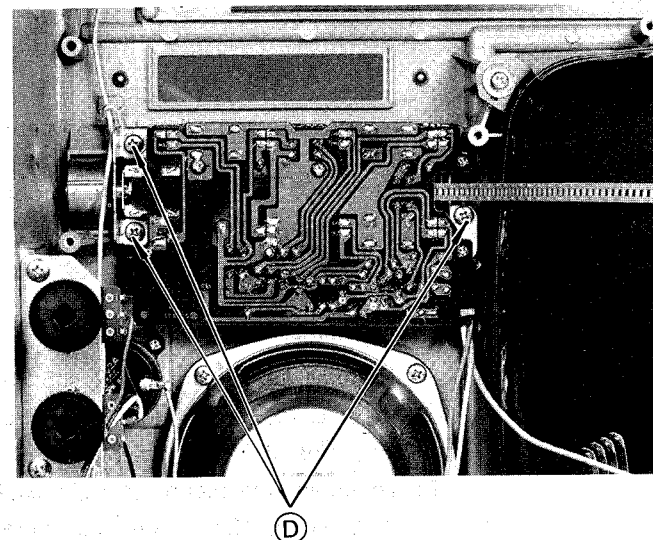


Fig. 6

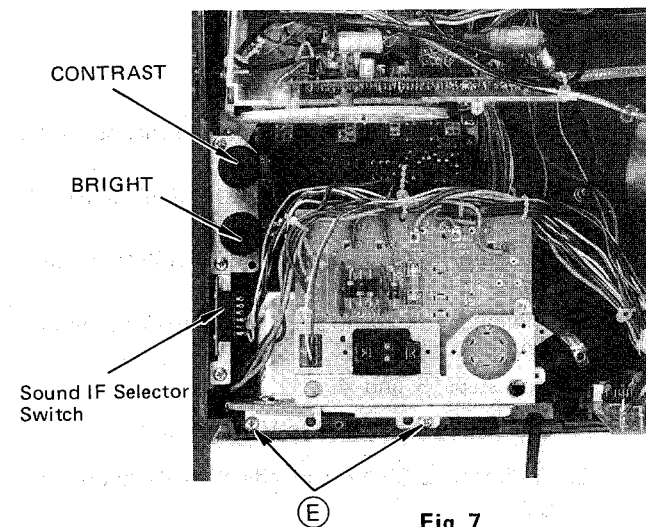


Fig. 7

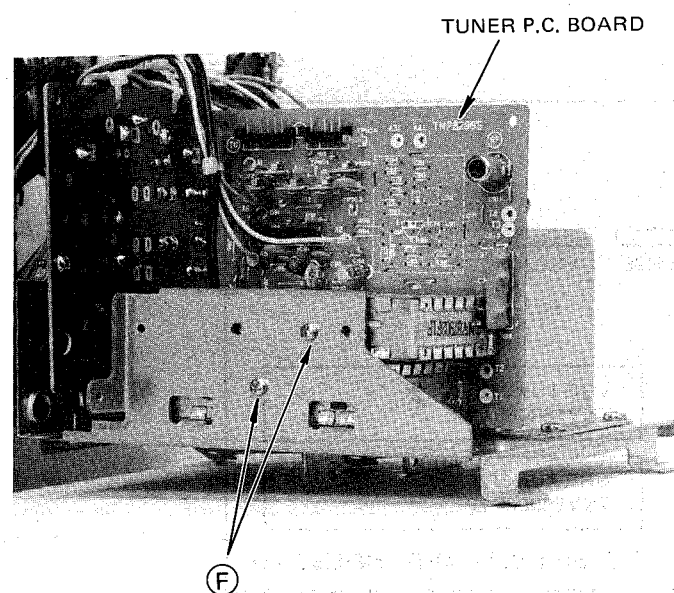


Fig. 8

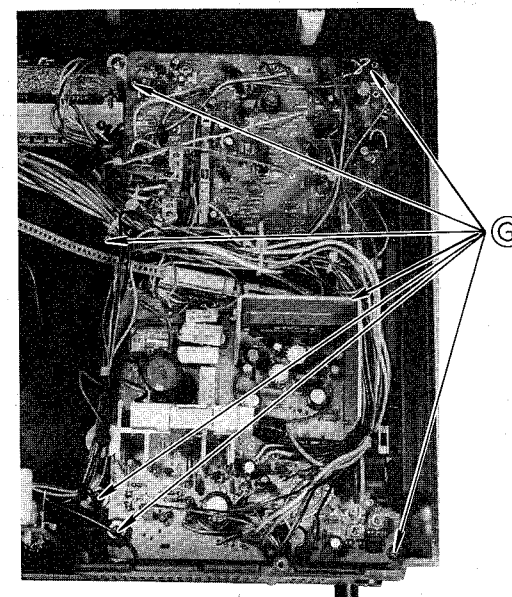


Fig. 9

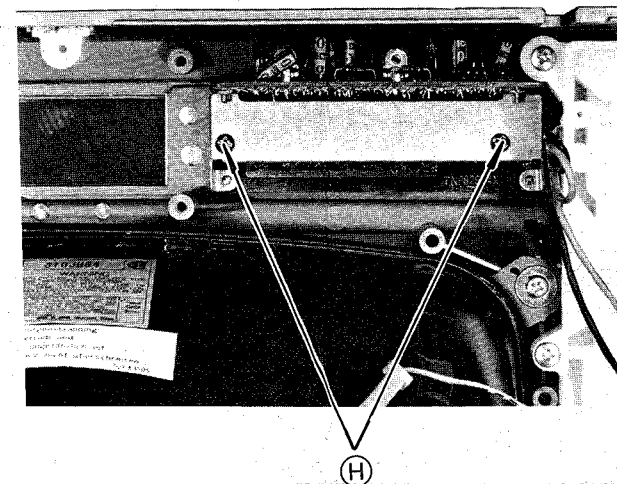


Fig. 10

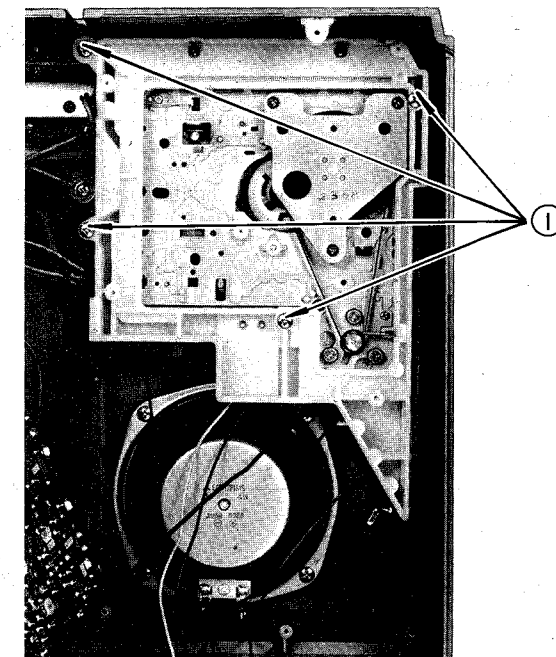


Fig. 11

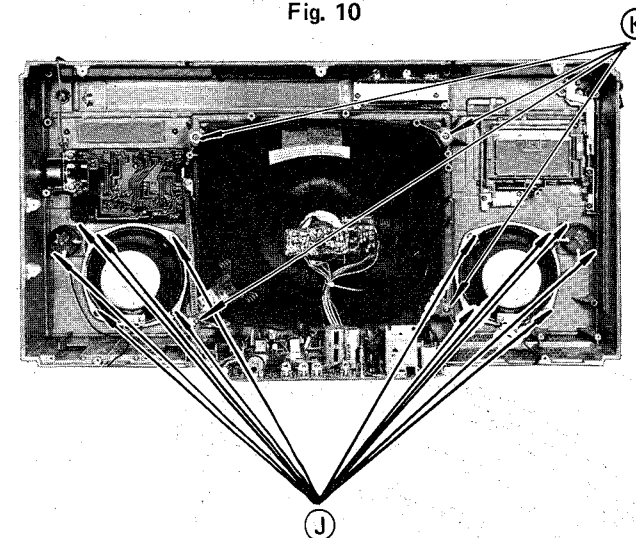


Fig. 12

Procedure	To remove ———.	Remove ———.	Shown in Fig. ———.
1	Rear Cover	<ul style="list-style-type: none"> • 5 screws..... ① (XTB4+20AFCx5) • (Loose 2 screws)..... ① 	4
2	Indicator Block	<ul style="list-style-type: none"> • Radio tuning knob and TV tuning knob • 7 screws ② (XTB3+10Ax7) • Pull the cabinet in the direction arrow ③ 	5
3	Control Panel Block	<ul style="list-style-type: none"> • The knobs on the panel • 3 screws ④ (XTB3+8Ax3) 	6
4	Power Block	<ul style="list-style-type: none"> • Volume Block and sound IF selector switch • 2 screws..... ⑤ (XTB4+10A) • ⑥ ⑦ and ⑧ connectors 	7
5	Tuner Block	<ul style="list-style-type: none"> • 2 screws ⑨ (XSN3+4S) 	8
6	Audio P.C.Board	<ul style="list-style-type: none"> • 8 screws ⑩ (THE210Zx7) • ⑪ Connector and wire (THE506-2x1) 	9
7	LED P.C.Board	<ul style="list-style-type: none"> • 2 screws ⑫ (XTV3+10A) 	10
8	Cassette Block	<ul style="list-style-type: none"> • 4 screws ⑬ (XTB4+35A) 	11
9	Speaker	<ul style="list-style-type: none"> • 12 screws ⑭ (XTB4+10Ax8) • (XTB3+10Ax4) 	12
10	Picture Tube	<ul style="list-style-type: none"> • 4 screws ⑮ (THE399-2) 	12

DIAL THREADING

Radio

1. Remove chassis from cabinet.
2. Turn dial drum to clockwise.
3. Arrows (① - ⑭) indicate correct order and indication of dial threading as shown in Fig. 13.

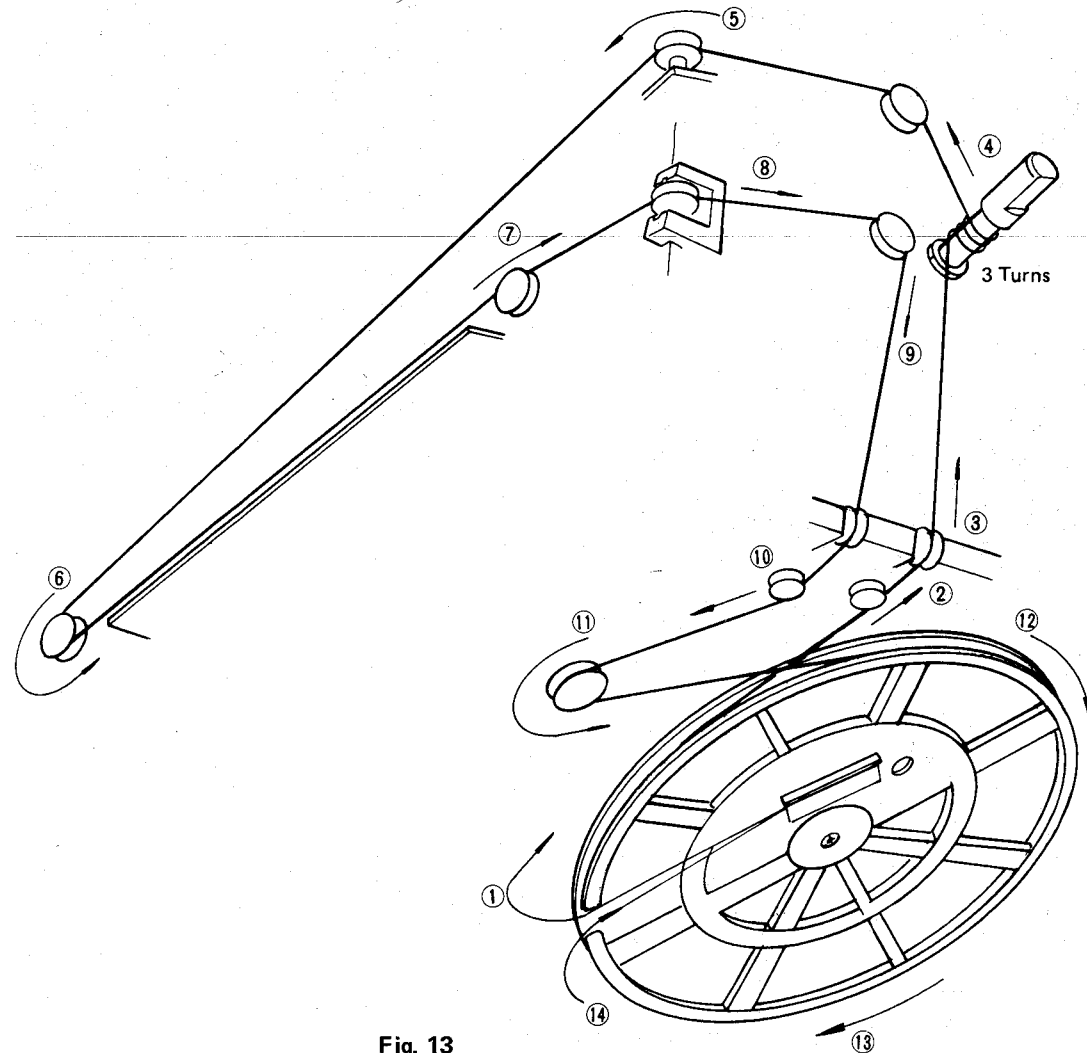


Fig. 13

TV

1. Remove chassis from cabinet.
2. Turn dial drum to clockwise.
3. Arrows (① - ⑫) indicate correct order and indication dial threading as shown in Fig. 14.

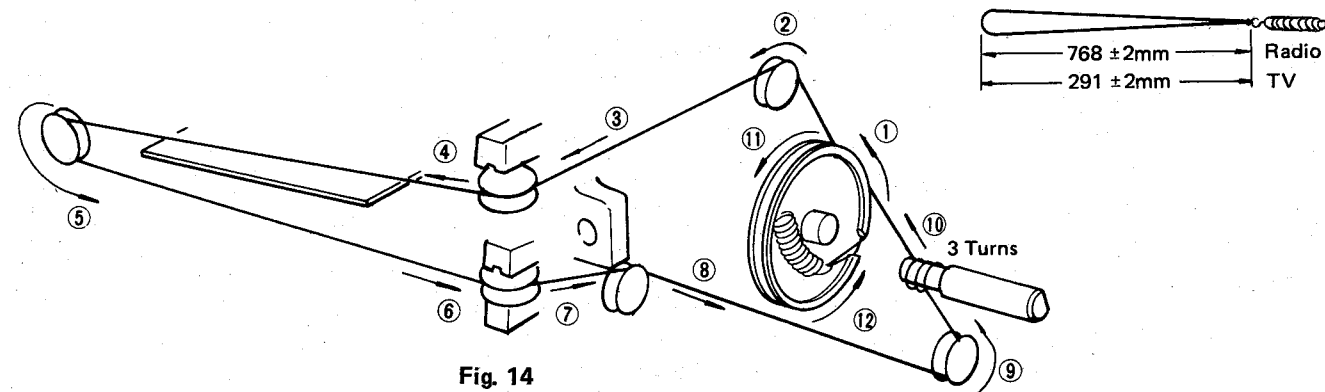


Fig. 14

GENERAL ALIGNMENT

TV INDICATOR ALIGNMENT

Preparation

1. Set up voltmeter as shown Fig. 15.
2. Maintain power supply voltage at 220 volt.

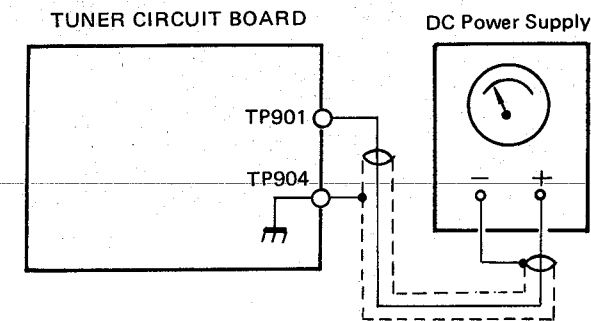


Fig. 15

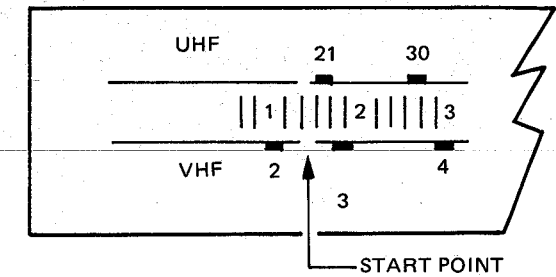


Fig. 16

ALIGNMENT PROCEDURE

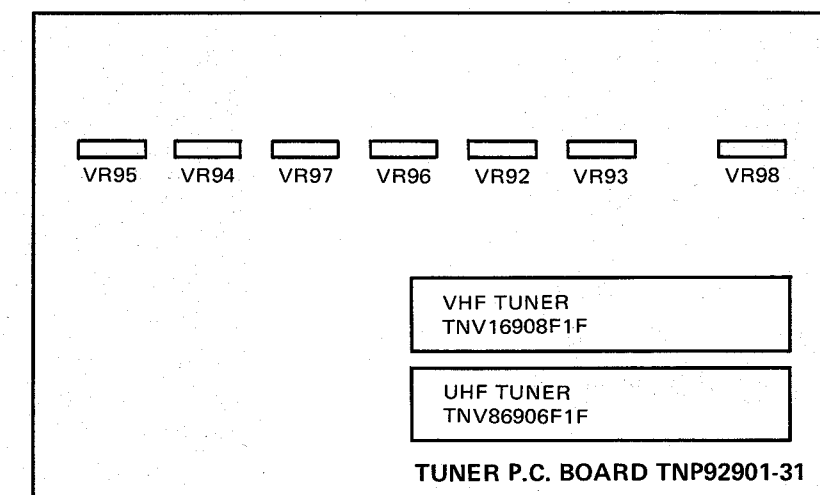
1. Set selector switch to TV position and channel switch to UHF position.
2. Connect a voltmeter between IC91 terminal NO. 3 and ground.
3. Set indicator to CH E21 and adjust VR93 to obtain 1.02V.
4. Set indicator to CHA53 and adjust VR95 to obtain 11.02V.
5. Repeat steps 3 and 4.
6. Set channel band switch to VHF position.
7. Set indicator to CHA2 and adjust VR92 to obtain 1.35V.
8. Set indicator to CHA6 and adjust VR94 to obtain 15.27V.
9. Repeat steps 7 and 8.

10. Set indicator to CHA11 and adjust VR96 to obtain 10.23V.
11. Set indicator to CHE5 and adjust VR97 to obtain 5.6V.
12. Repeat steps 10 and 11.

NOTE: The following condition are required.

VHF: To obtain the picture at ch2, ch5, ch6, ch10, ch11, +0.5ch from the correct indication points is acceptable.

UHF: To obtain the picture at ch21, ch25, ch53, ch83, +2ch from the correct indication points is acceptable.



RADIO ALIGNMENT

RADIO IF (455KHz) ADJUSTMENT CONNECTION

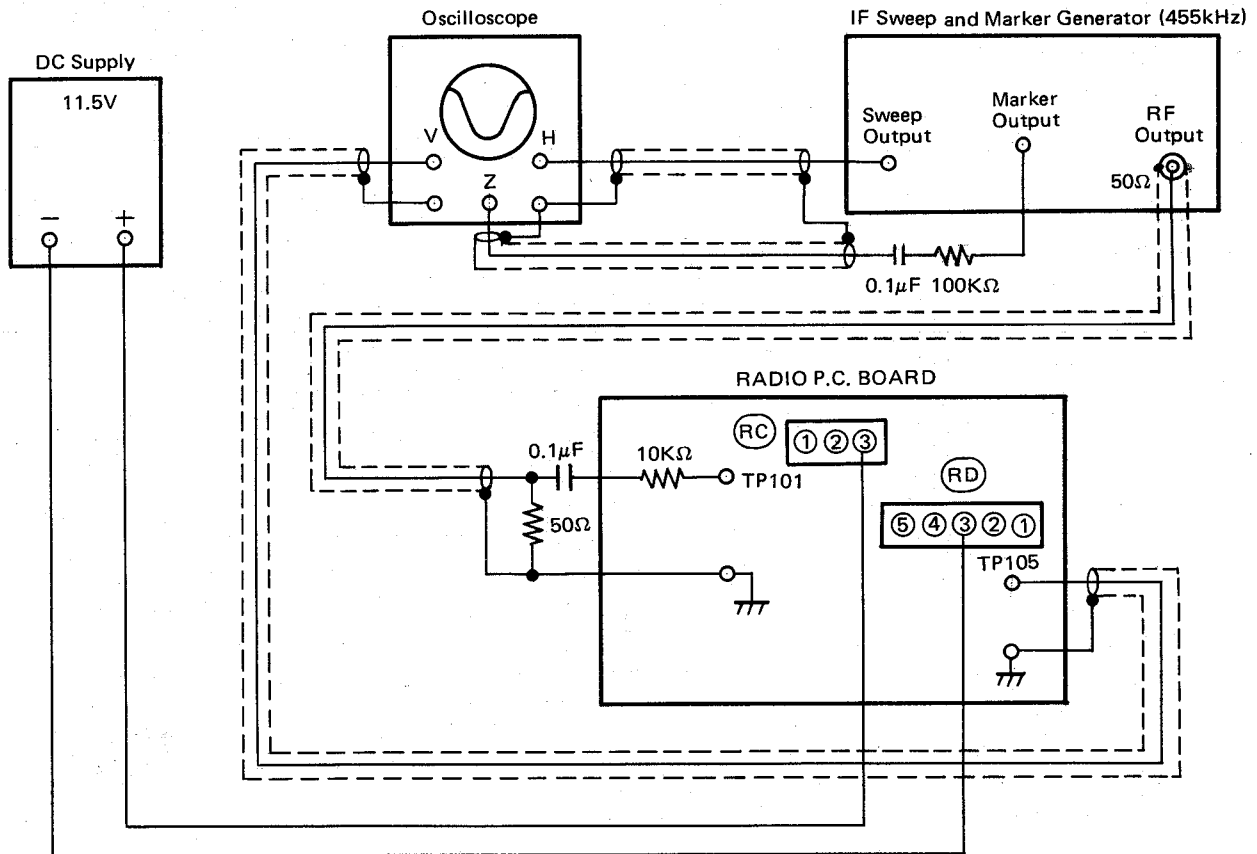


Fig. 18

ALIGNMENT STEP

1. Set band select switch to **MW** position.
2. Adjust T1101, T1102 and T1103 to obtain the wave form as shown in Fig. 19.

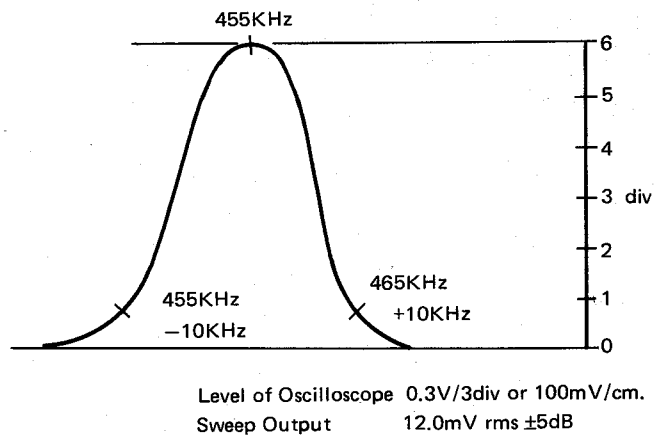


Fig. 19

RADIO IF (10.7MHz) ADJUSTMENT CONNECTION

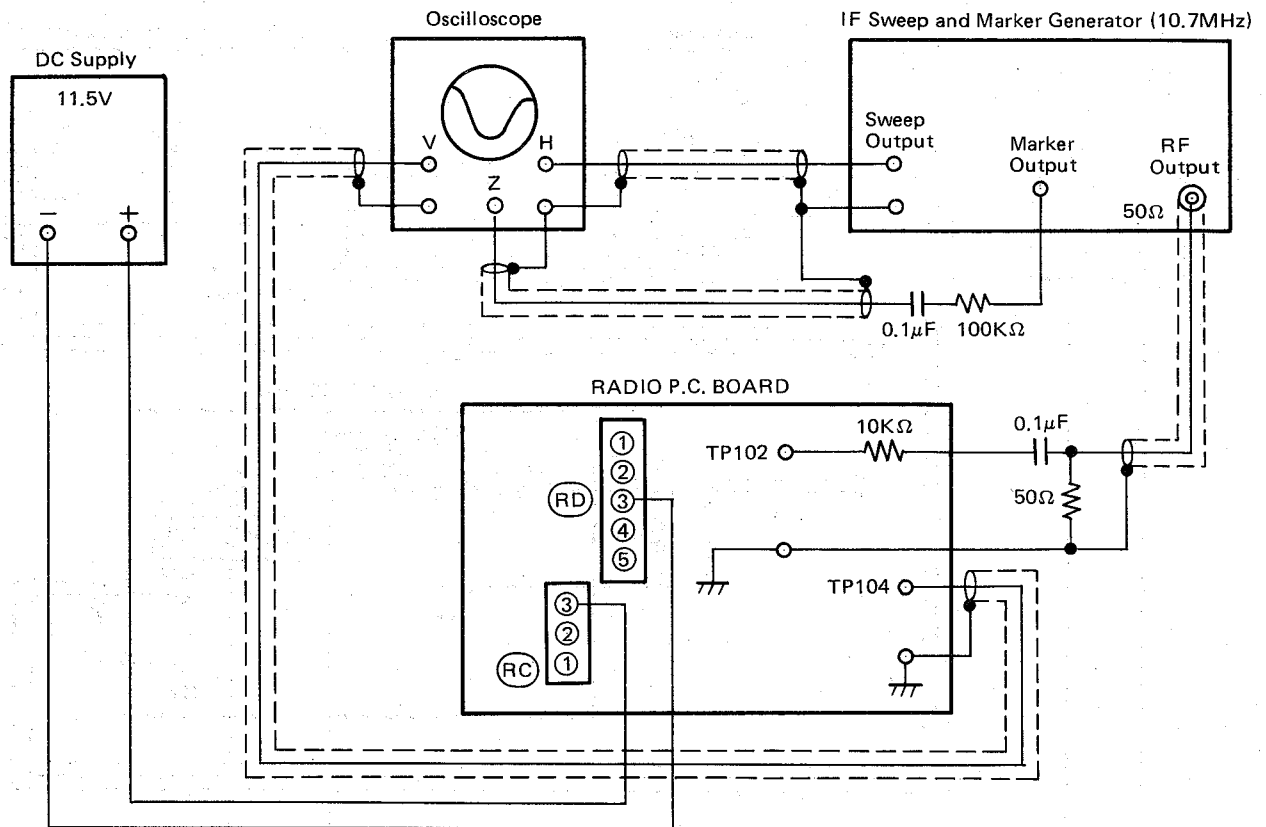


Fig. 20

ALIGNMENT STEP

1. Set band select switch to FM position.
2. Adjust T1003 until the 10.7kHz marker is at the center of slanted line as shown in Fig. 21.
3. Adjust T1001, T1002 and T1003 to obtain the waveform as shown in Fig. 21.

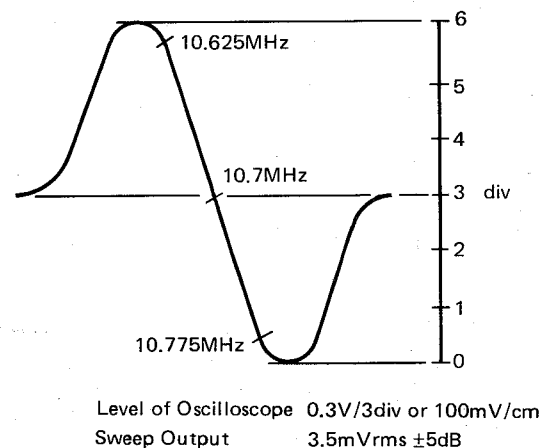


Fig. 21

MW/LW TRACKING ADJUSTMENT CONNECTION

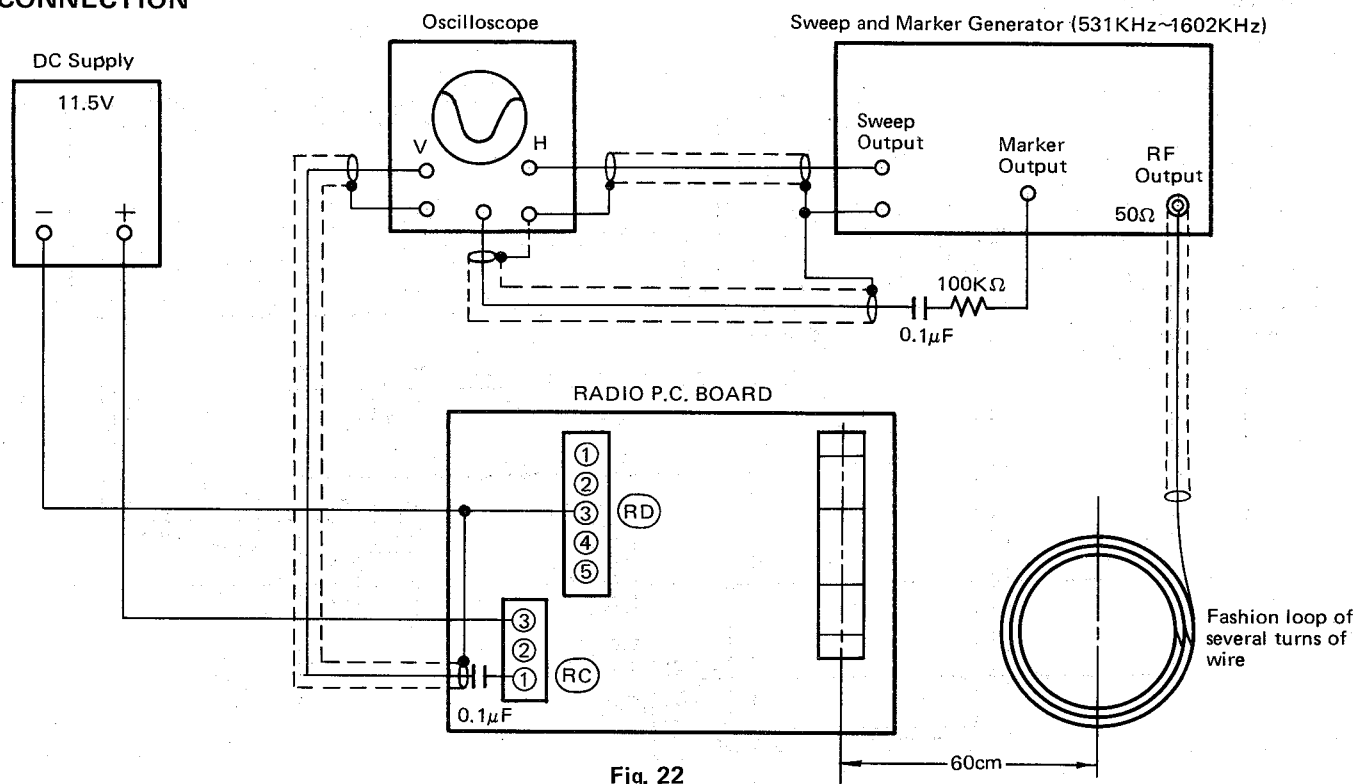


Fig. 22

ALIGNMENT STEP MW TRACKING

1. Set band select switch to **MW** position.
2. Set radio indicator to **600kHz** position.
3. Adjust L1105 to obtain maximum output at **600kHz** marker as in Fig. 23.
4. Set radio indicator to **1400kHz**.
5. Adjust C1111 of trimmer to maximum output at **1400kHz** marker as in Fig. 23
6. Repeat step 2 – 5 several times to set radio indicator to correct position.
7. Set radio indicator to **600kHz** position.
8. Adjust a direction of L1102 to obtain the maximum amplitude. (Note: After this adjustment is done, L1102 should be fixed by paraffin)
9. Set radio indicator to **1400kHz** position.

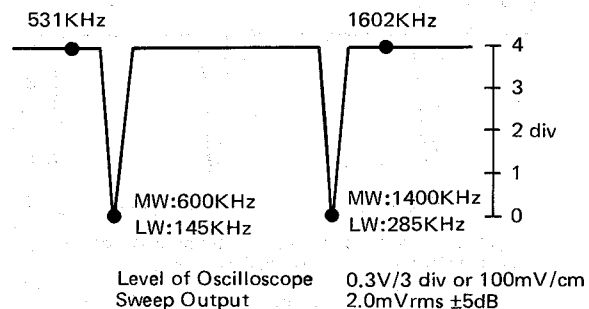


Fig. 23

10. Adjust C1103 of trimmer to obtain the maximum amplitude.
11. Repeat step 7 – 10 several times to obtain the maximum amplitude at both **600kHz** and **1400kHz** marker as in Fig. 23.

LW TRACKING

1. Set band select switch to **LW** position.
2. Set radio indicator to **145kHz** position.
3. Adjust L1104 to obtain maximum output at **145kHz** marker as in Fig. 23.
4. Set radio indicator to **285kHz**.
5. Adjust C1110 of trimmer to maximum output at **285kHz** marker as in Fig. 23.
6. Repeat step 2 – 5 several times to set radio indicator to correct position.
7. Set radio indicator to **145kHz** position.
8. Adjust a direction of L1102 to obtain the maximum amplitude. (Note: After this adjustment is done L1102 should be fixed by paraffin)
9. Set radio indicator to **285kHz** position
10. Adjust C1102 of trimmer to obtain the maximum amplitude.
11. Repeat step 7 – 10 several time to obtain the maximum amplitude at both **145kHz** and **285kHz** marker as in Fig. 23.

SW TRACKING ADJUSTMENT CONNECTION

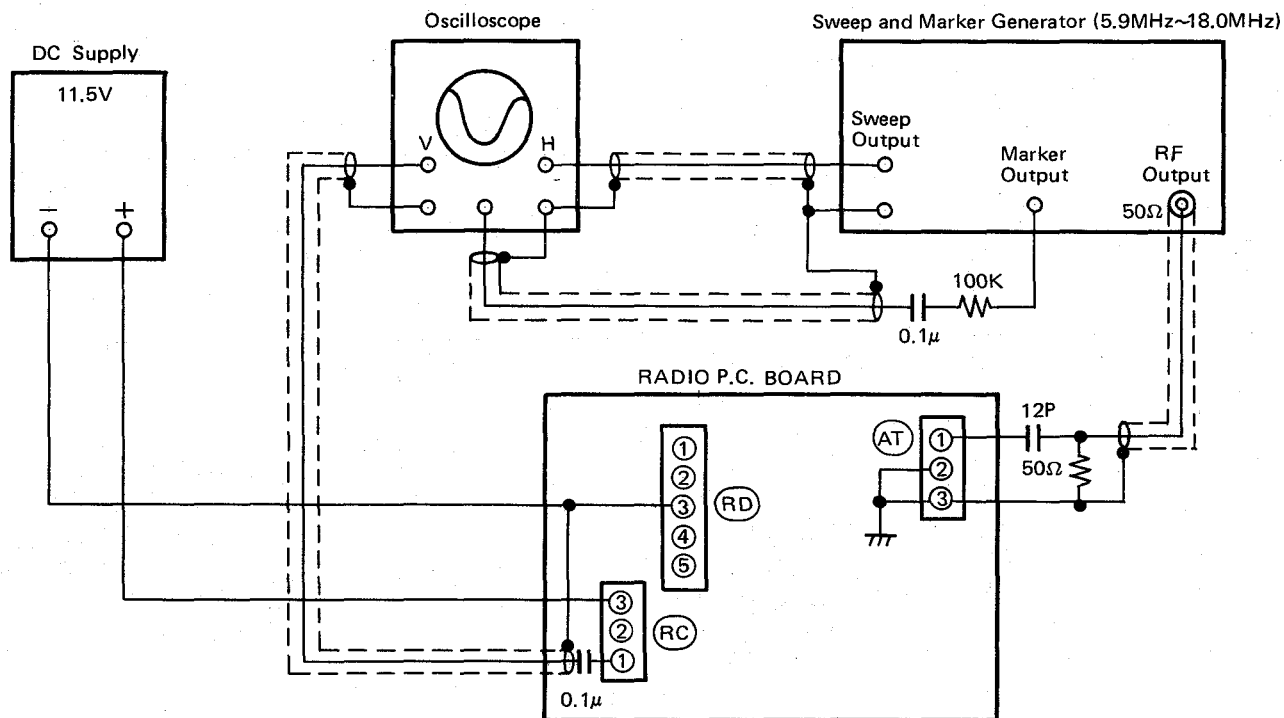


Fig. 24

ALIGNMENT STEP

1. Set band selector switch to **SW** position.
2. Set radio indicator to **6.0MHz** position.
3. Adjust L1106 to obtain maximum output at **6.0MHz** marker as in Fig. 25.
4. Set radio indicator to **18.0MHz**.
5. Adjust C1 of P.V.C. trimmer (See Fig. 25.) to obtain maximum output at **18.0MHz** marker as in Fig. 25.
6. Repeat step 2 – 5 several times to set radio indicator to correct position.
7. Set radio indicator to **6.0MHz** position.
8. Adjust a direction of L1103 to obtain the maximum amplitude.
9. Set radio indicator **18.0MHz** position.
10. Adjust C2 of P.V.C. trimmer to obtain the maximum amplitude.
11. Repeat step 7 – 10 several times to obtain the maximum amplitude at both **6.0MHz** and **18.0MHz** marker as in Fig. 25.

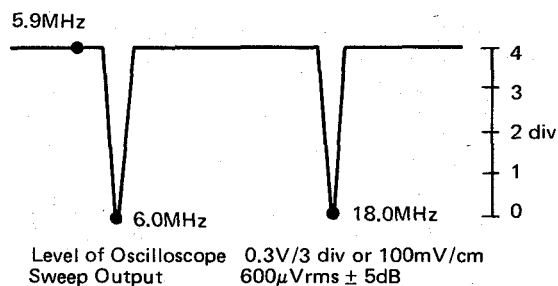
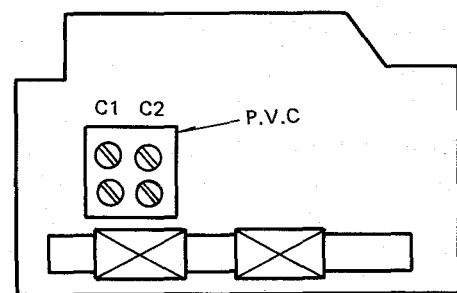


Fig. 25

FM TRACKING ADJUSTMENT CONNECTION

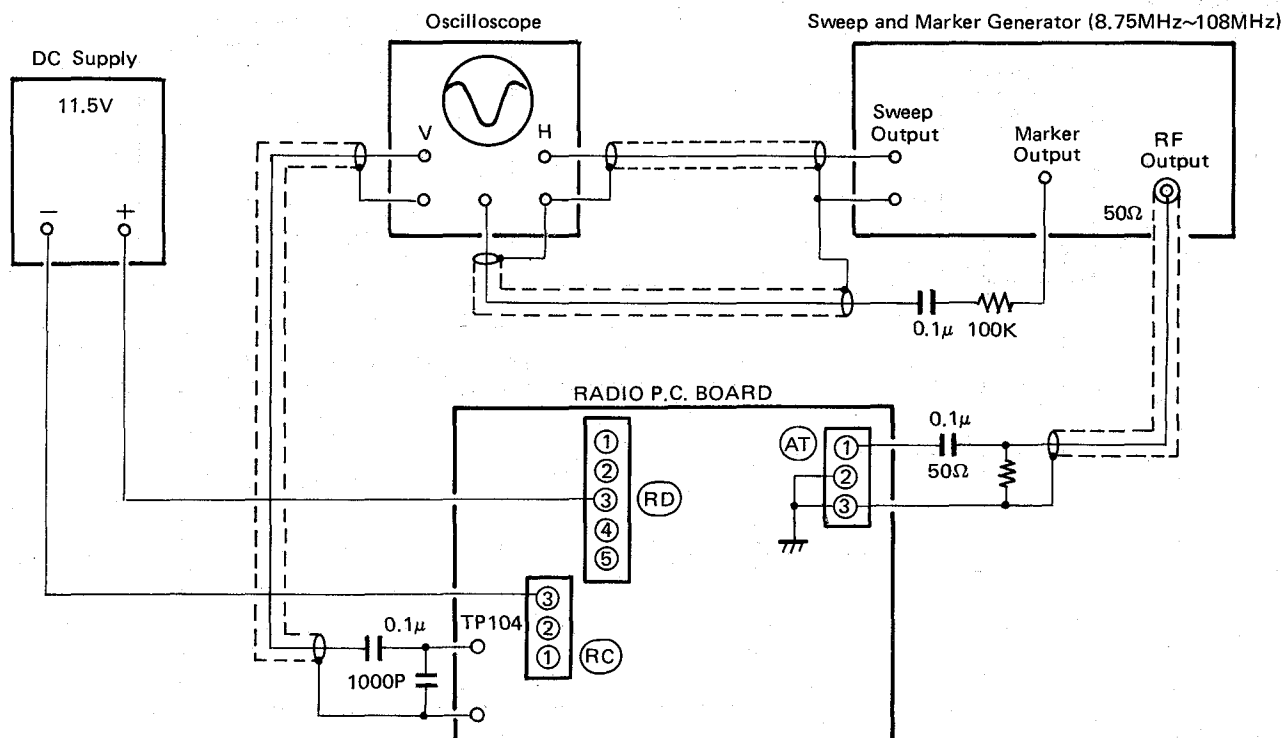


Fig. 26

ALIGNMENT STEP

1. Set band selector switch to **FM** position.
2. Set radio indicator to **90MHz** position.
3. Adjust L1002 to set **90MHz** marker to the center of slanted line as shown in Fig. 27.
4. Set radio indicator to **106MHz** position.
5. Adjust FC1 of P.V.C. trimmer to set **106MHz** marker to the center of slanted line as shown in Fig. 27.
6. Repeat step 2 — 5 several times to set radio indicator to correct position.
7. Set radio indicator to **90MHz** position.
8. Adjust L1001 to obtain the maximum amplitude.
9. Set radio indicator to **106MHz** position.
10. Adjust FC2 of P.V.C. trimmer to obtain the maximum amplitude.
11. Repeat step 7 — 10 several times to obtain the maximum amplitude at both **90MHz** and **106MHz** marker as in Fig. 27.

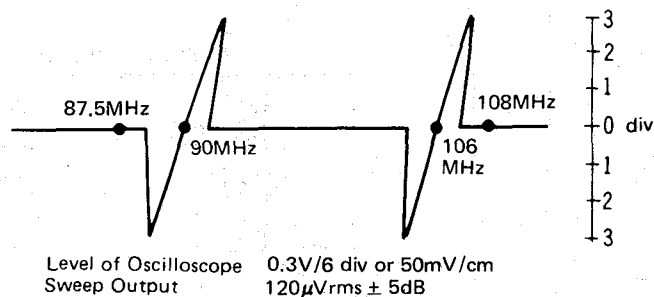


Fig. 27

19KHz ALIGNMENT CONNECTION



Adjust VR101 to obtain $19\text{kHz} \pm 0.1\text{kHz}$.

Fig. 28

**SEPARATION ALIGNMENT
CONNECTION**



1. Set band select switch to **FM** position.
2. Set mode switch to stereo position and balance control to "**L**" (left) position.
3. Adjust VR102 to obtain the minimum "**R**" (right) output.

4. Set balance control to "R" (right) position.
5. Adjust VR102 to obtain the minimum "L" (left) output.



Fig. 30 Control Location

CASSETTE TAPE RECORDER ALIGNMENT

TRAP COIL ALIGNMENT

Preparation

1. Set up Oscilloscope and DC power supply as shown in Fig. 31.

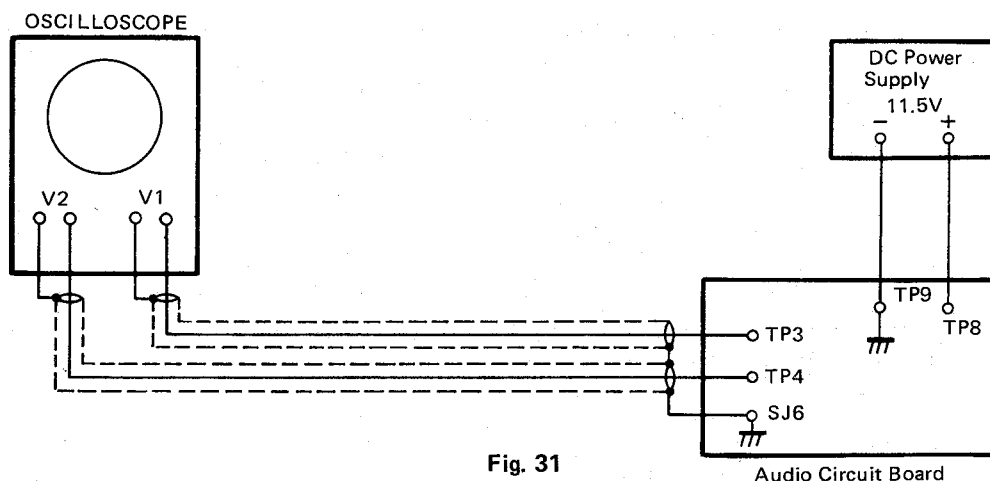


Fig. 31

Alignment Procedure

1. Set VR141 and VR151 to center position.
2. Set tape recorder to recording mode.
3. Adjust L1401 and L1501 to obtain minimum level.

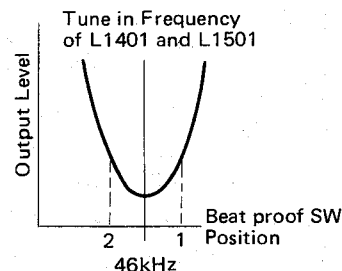


Fig. 32

BIAS ALIGNMENT

Preparation

1. Set up Voltmeter and DC power supply as shown in Fig. 33.

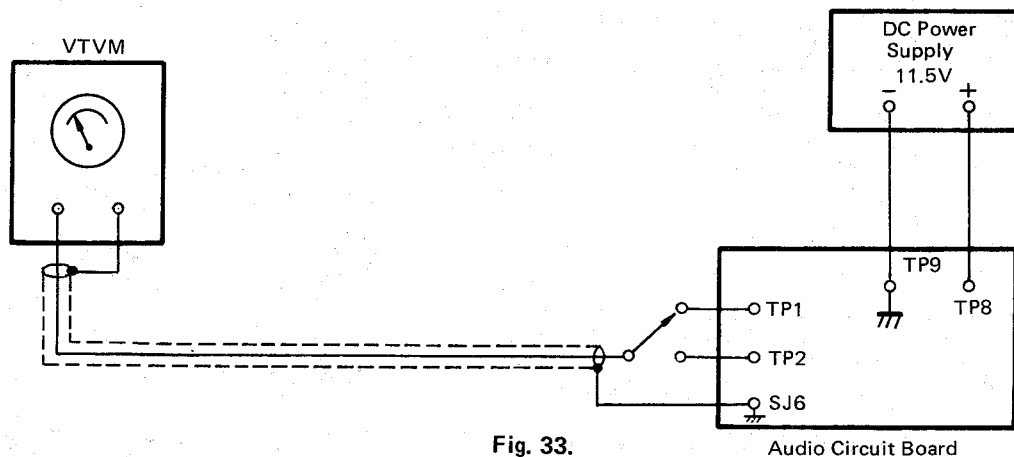


Fig. 33.

Alignment Procedure

1. Set tape recorder to recording mode and best proof SW102 at position 2.
2. Adjust VR141 and VR151 to obtain the voltage of $+3.8\text{mV} \pm 0.2\text{mV}$.
3. Confirm VR141 and VR151 to obtain the voltage of $+3.9\text{mV} \pm 0.3\text{mV}$ with SW102 at position 1.

Note: Trap coil alignment and Bias alignment interact with one another. Repeat alignment several times to confirm correct trap coil and bias alignment.

R/P HEAD AZIMUTH

Preparation

1. Set up Oscilloscope and DC supply as shown in Fig. 34.

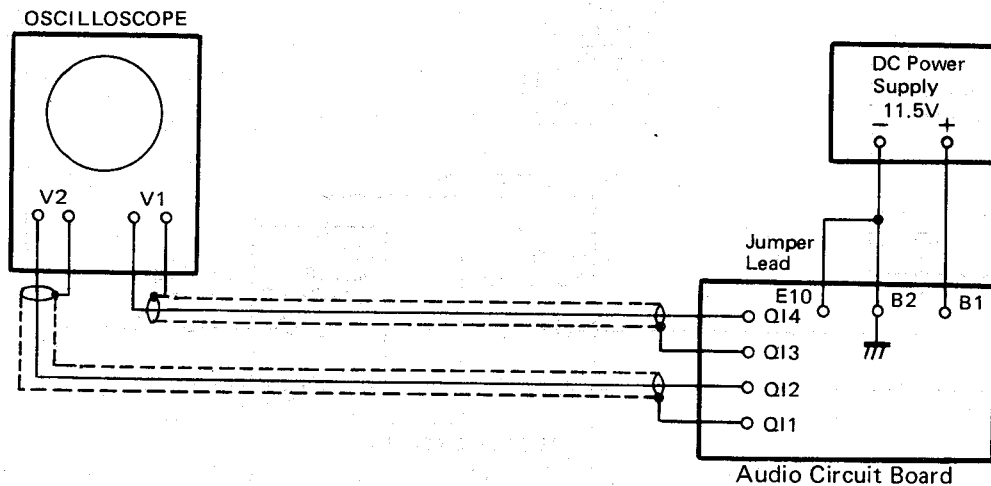


Fig. 34

Alignment Procedure

1. Play azimuth tape (9ZZCFM).
2. Adjust screw for Maximum indication on oscilloscope when playback by the test tape.
3. Fix adjustment lock head adjustment screw with lacquer.

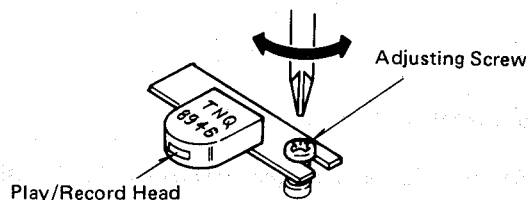


Fig. 35

LED METER ALIGNMENT

LED METER ALIGNMENT

Preparation

1. Set up Signal Generator and DC power supply as shown in Fig. 36.

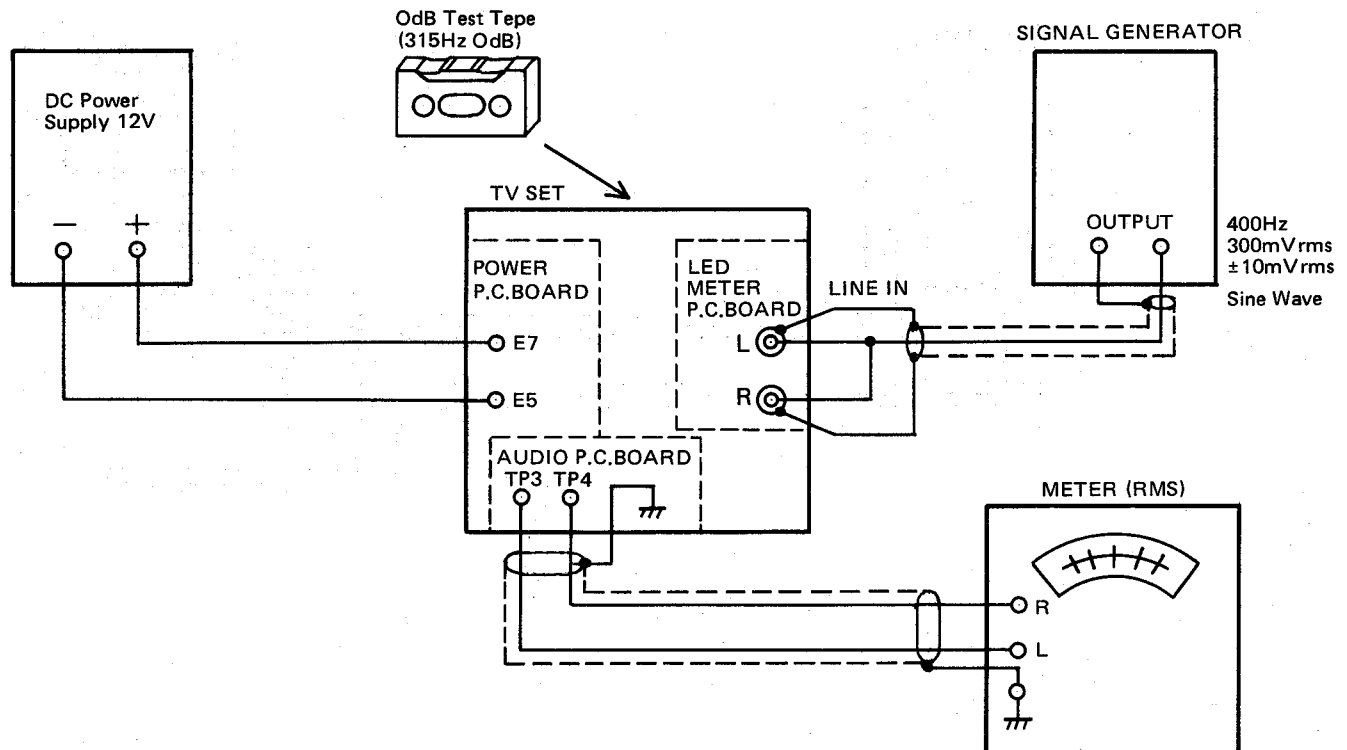


Fig. 36

Alignment Procedure

1. Set the LED meter switch (SW301) to "ON" position.
2. Set the TV/Radio/Tape/Line in Selector to "TAPE" position.
3. Put the test tape (9ZZCFM) and Set the tape recorder to playback mode.
4. Adjust VR301 (L side) to obtain light the 5th. LED meter from left side as shown in Fig. 37.
5. Adjust VR302 (R Side) to obtain light the 5th. LED meter from left side as shown in Fig. 37.

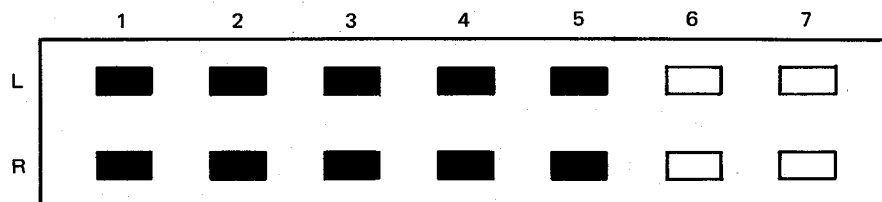
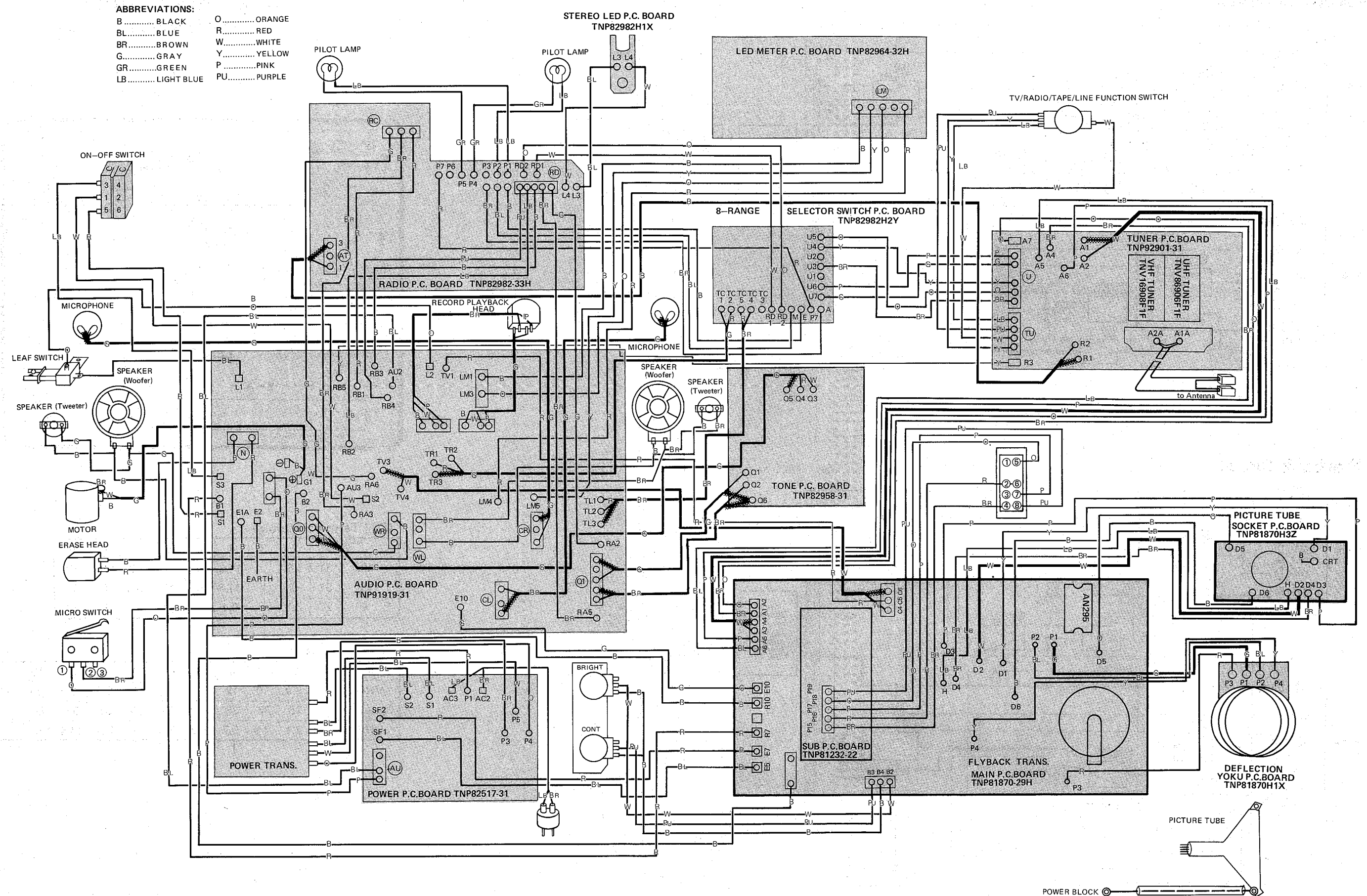


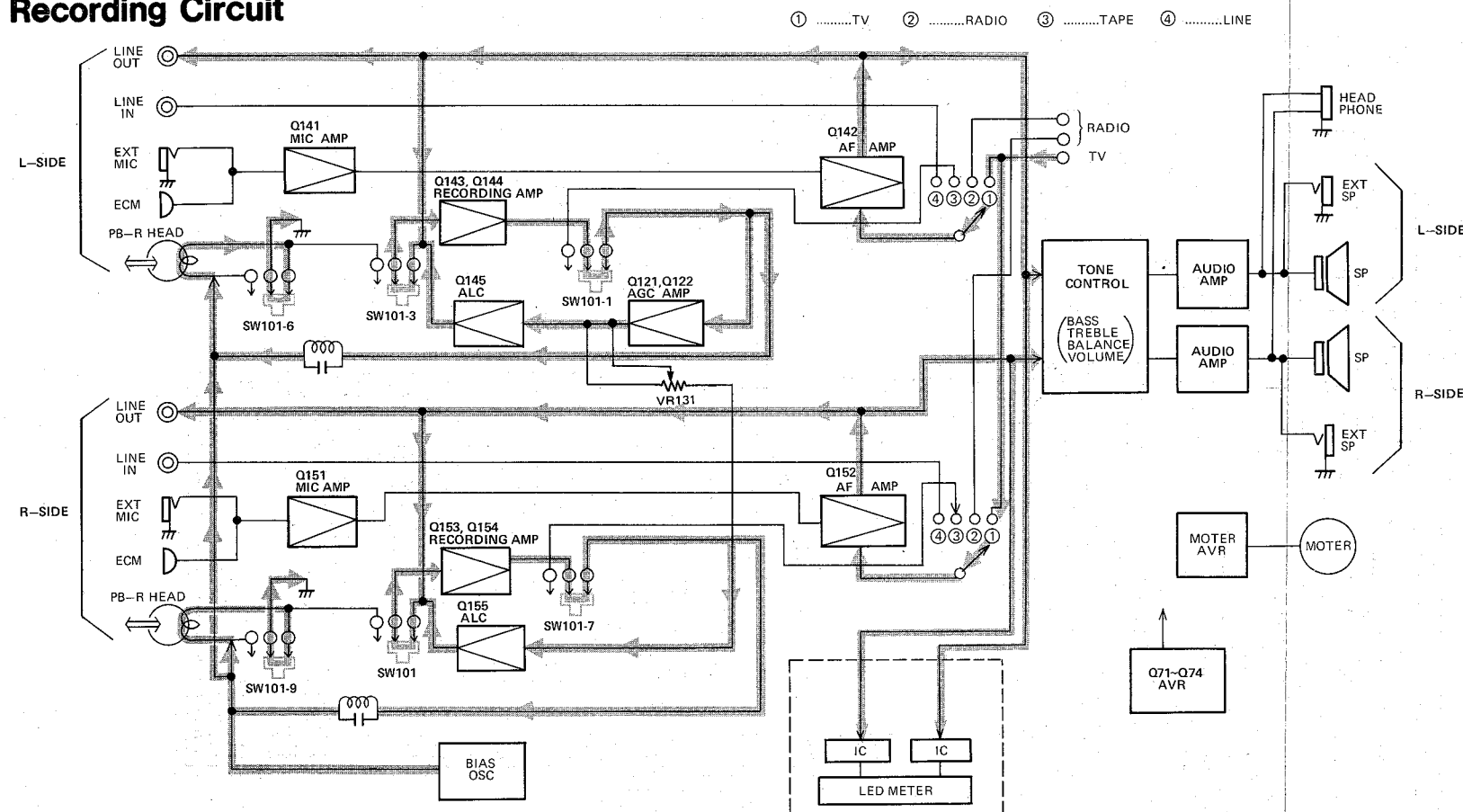
Fig. 37

CONNECTION TABLE

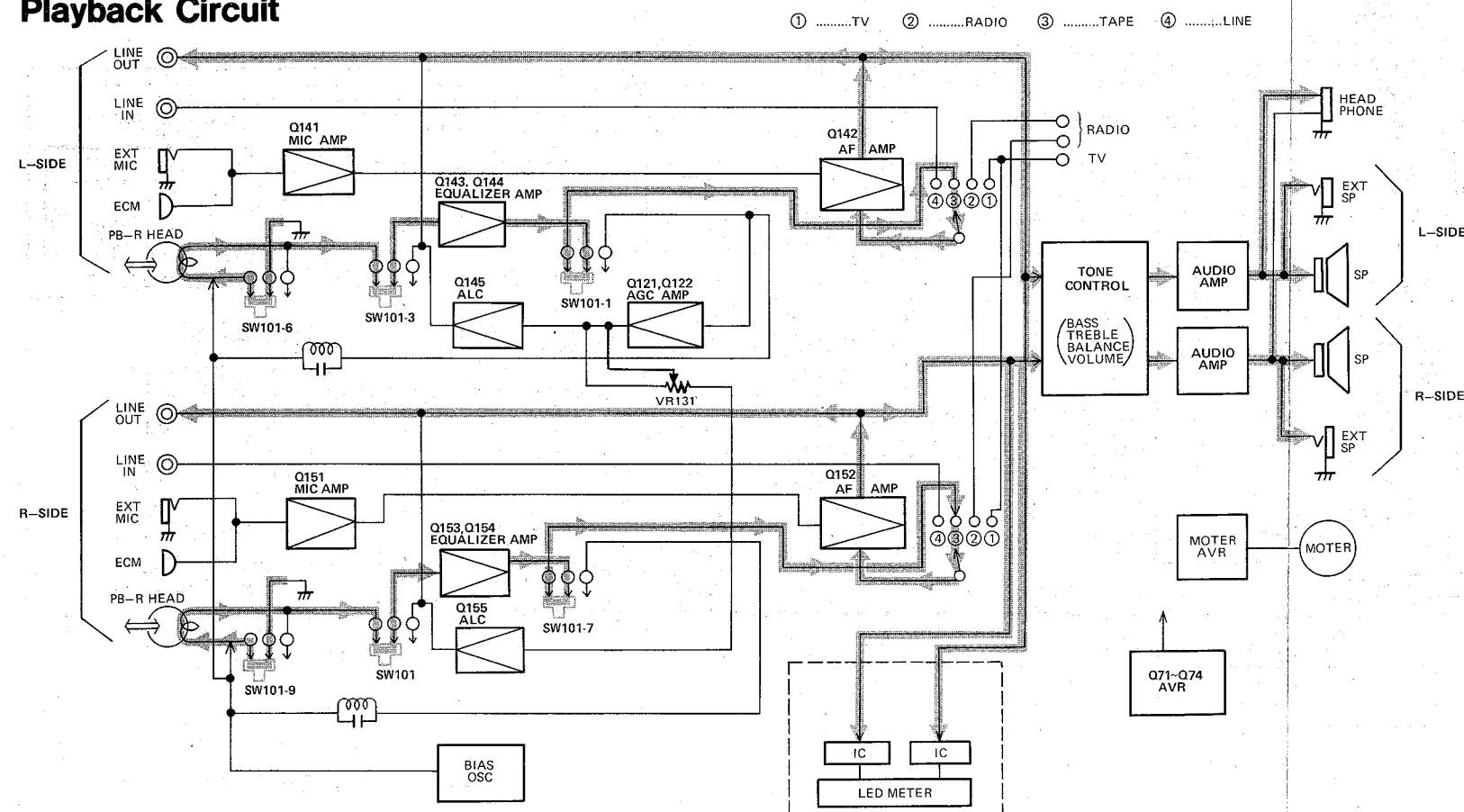


BLOCK DIAGRAM FOR TAPE RECORDER

Recording Circuit

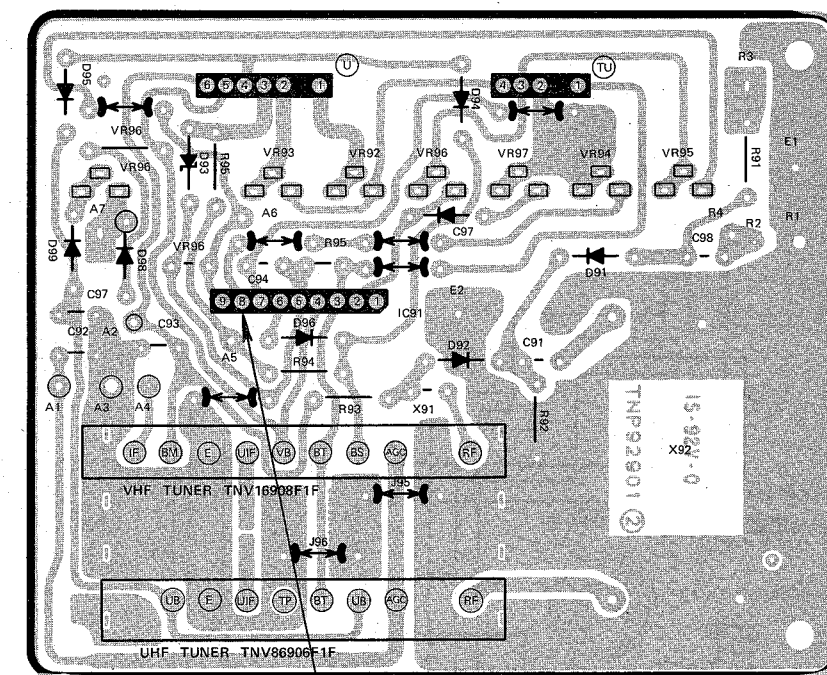


Playback Circuit



CONDUCTOR VIEW

TUNER CIRCUIT BOARD TNP82965-33



IC91 Terminal Voltage

TV Band	Terminal NO.	1	2	3	4	5	6	7	8	9
VL		31	26		11.3	0	-7	27	31	32
VH		31	0		11.3	0	10	6.3	6	32
U		27	8.3		0.4	0	-7	6.4	8	32

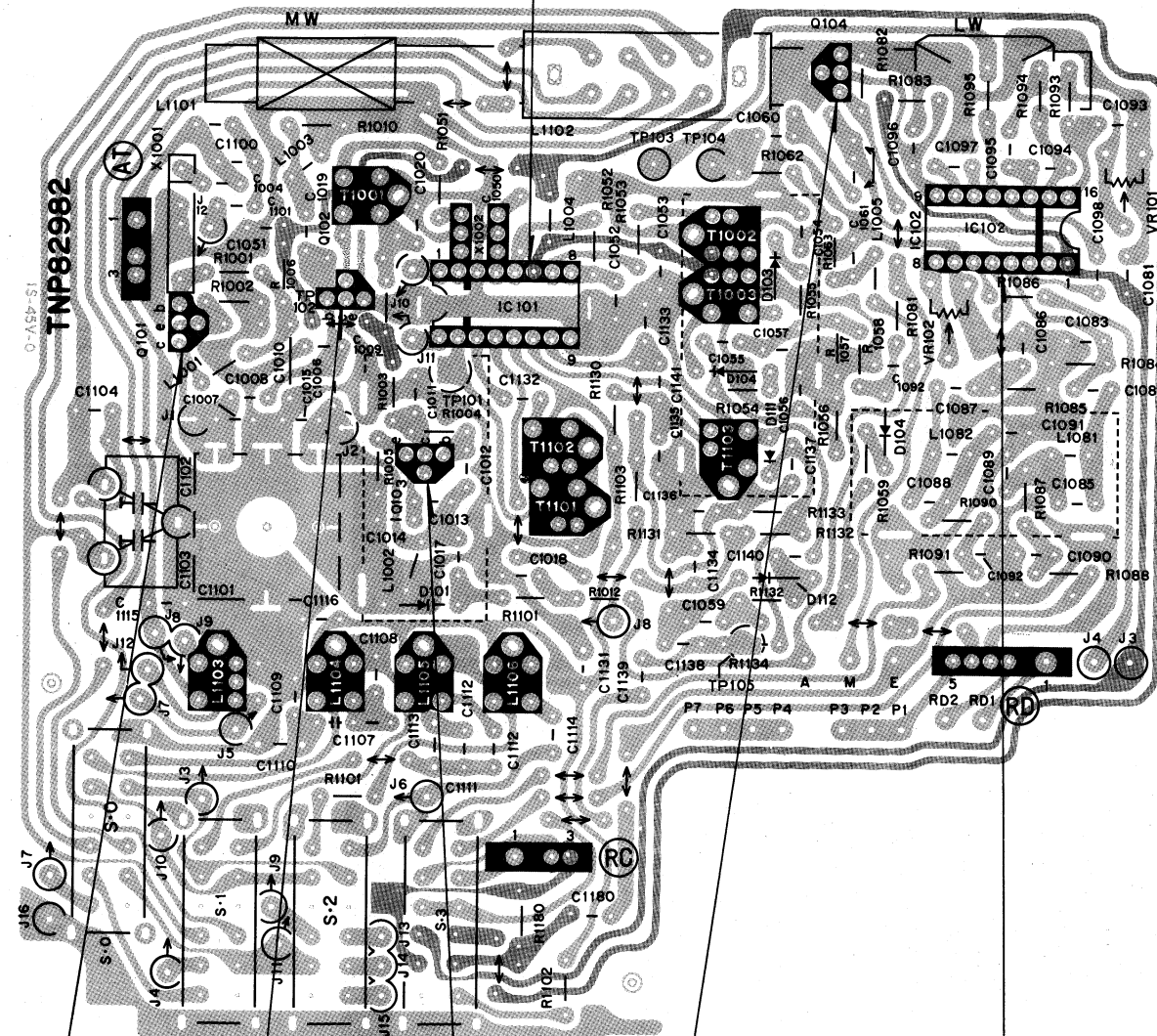
IC91 Terminal 3

Channel	1	2	3	4	5	6	7	8	9	10	11	12
VHF	0.2	3.9	10	12	17	7	8	9.3	10.5	11.6	13.2	16
Channel	21	25	30	35	40	45	50	55	60	65	69	
UHF	0.9	2.1	3.8	5.7	8.2	8.8	10.7	12.4	14.4	16.2	18	

CONDUCTOR VIEW

RADIO CIRCUIT BOARD TNP82982-33H

IC101																
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AM	4.8V	0V	0V	0V	0V	0V	0V	0V	0V	0.7V	4.8V	4.8V	0.7V	0.7V	4.8V	0.7V
FM	0V	0.7V	0V	2.8V	3.5V	4.6V	4.5V	3.4V	0V	0V	0V	0V	0V	0V	0V	0V



Q101	
C	3.2V
B	0.8V
E	0.04V

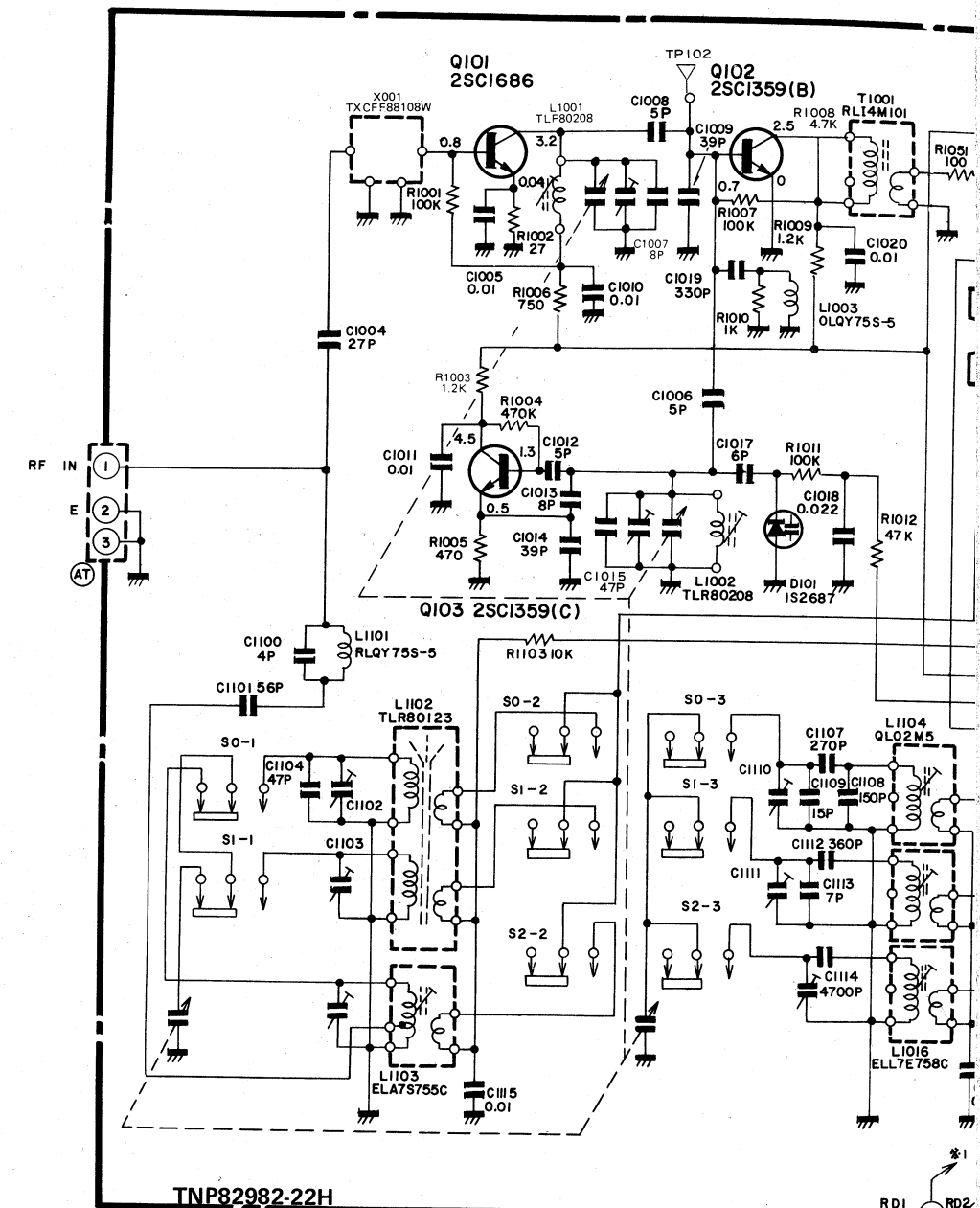
Q102	
C	2.5V
B	0.7V
E	0V

Q103	
C	4.5V
B	1.3V
E	0.5V

Q104	
AM	FM
C	0.03V 0.06V
B	0V 0.6V
E	0V 0V

IC102			
1	11.8V	9	0.06V
2	3.4V	10	1.7V
3	3.1V	11	1.7V
4	3.9V	12	1.4V
5	3.8V	13	1.7V
6	10.2V	14	1.7V
7	0V	15	1.7V
8	0.2V	16	2.6V

SCHEMATIC

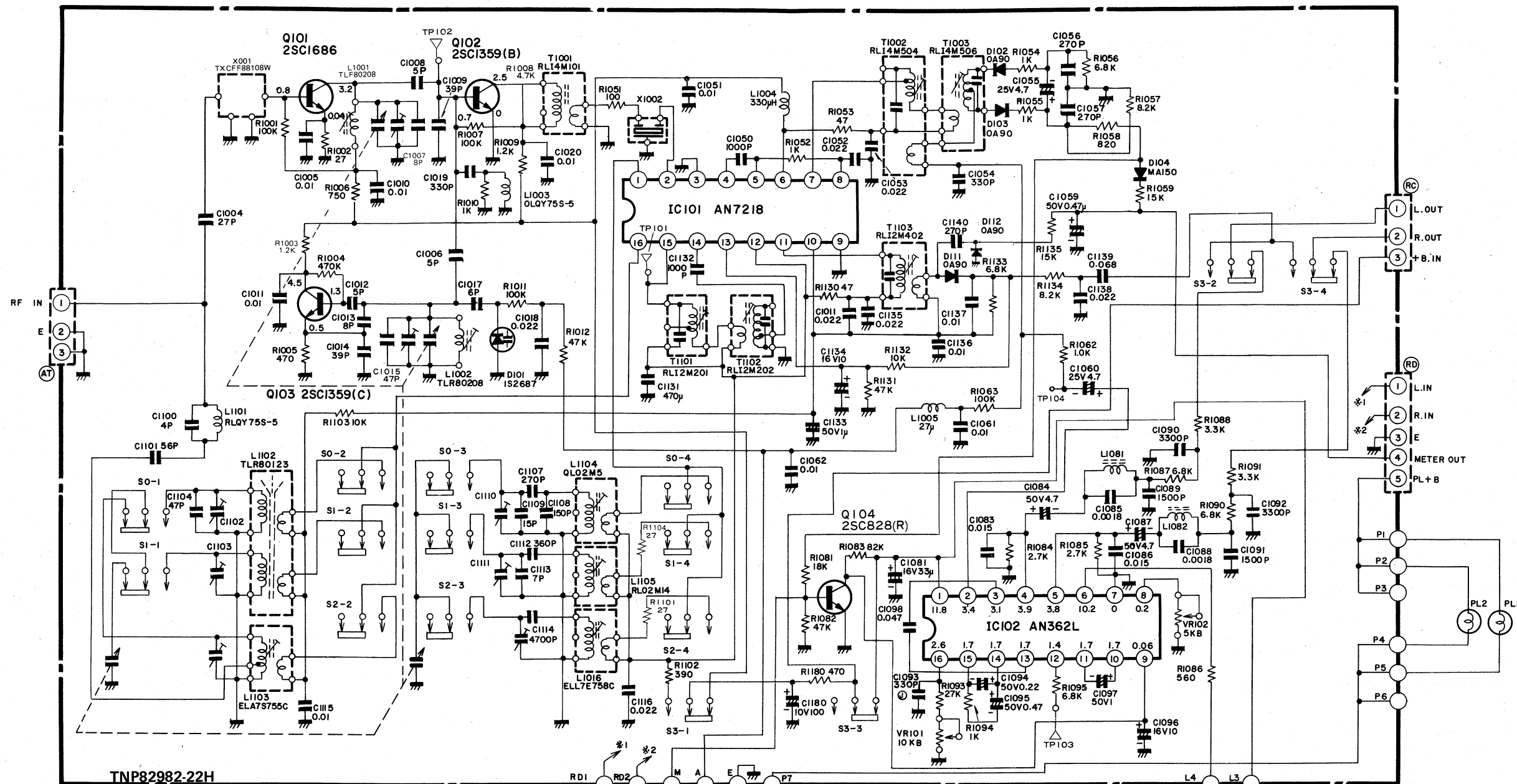


S1 ~ S5	BAND SELECT SWITCH
S5	VHF
S4	UHF
S3	FM
S2	SW
S1	MW
S0	LW

IC101

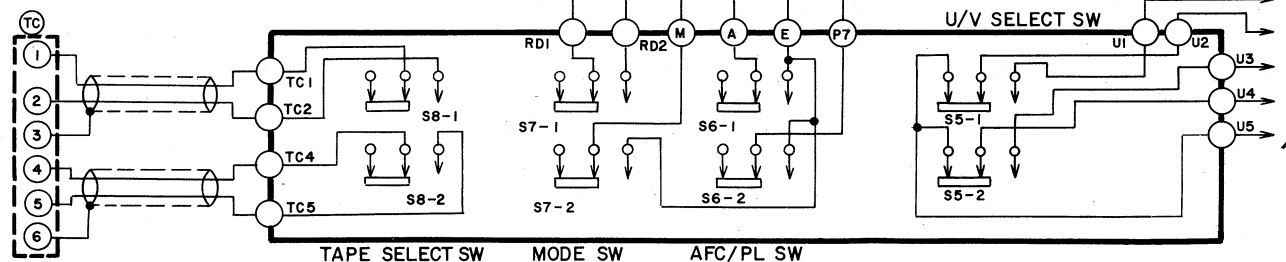
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AM	4.8V	0V	0V	0V	0V	0V	0V	0V	0V	0.7V	4.8V	4.8V	0.7V	0.7V	4.8V	0.7V
FM	0V	0.7V	0V	2.8V	3.5V	4.6V	4.5V	3.4V	0V	0V	0V	0V	0V	0V	0V	0V

SCHEMATIC DIAGRAM FOR RADIO



S1~S5 BAND SELECT SWITCH

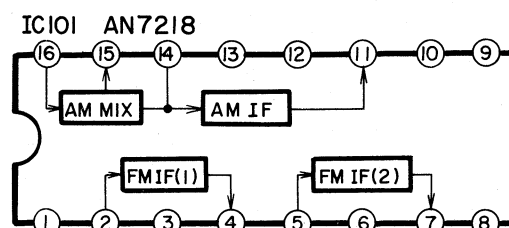
S5	S4	S3	S2	S1	S0
VHF	UHF	FM	SW	MW	LW



TAPE SELECT SW MODE SW AFC/PL SW

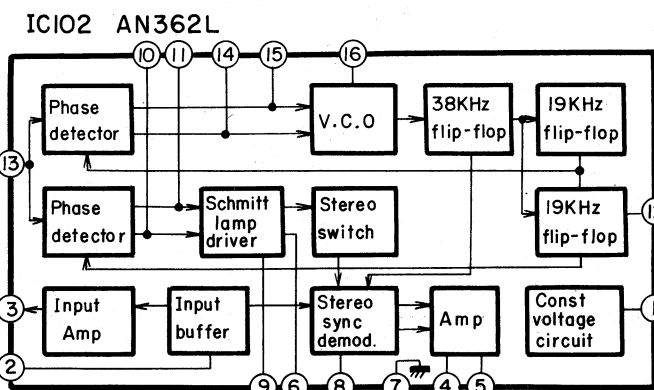
Q104

	A	M	FM
C	0.03V	0.06V	
B	0 V	0.6 V	
E	0 V	0 V	



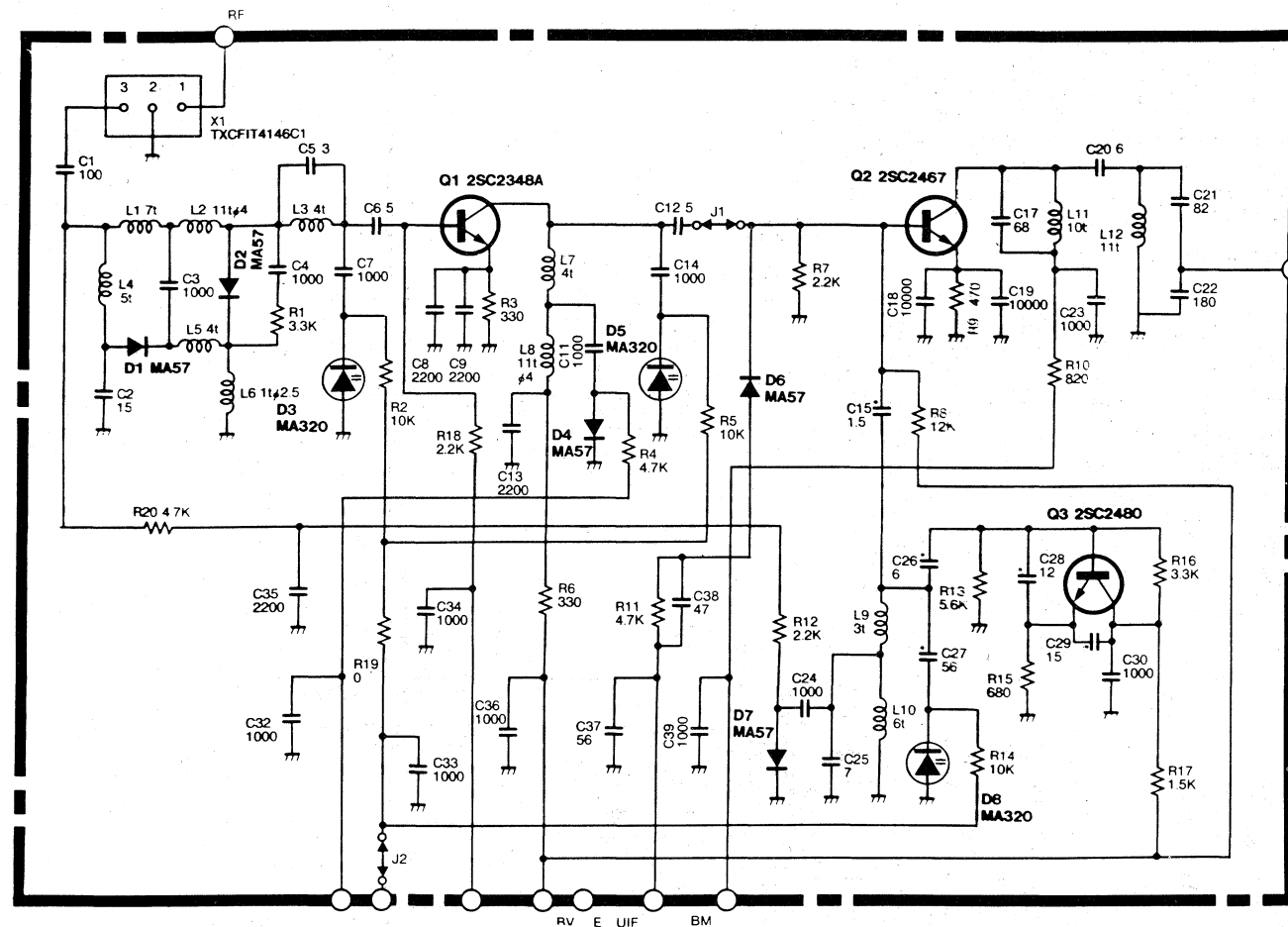
TO TUNER CIRCUIT BOARD

FM STEREO IND

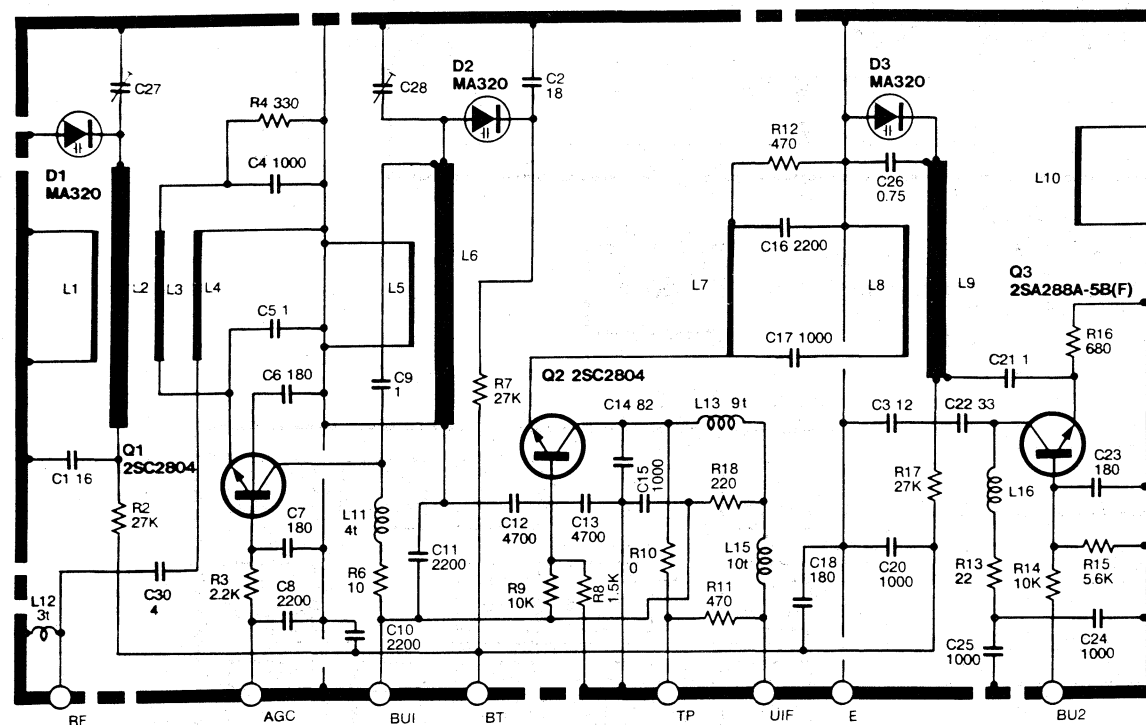


SCHEMATIC DIAGRAM FOR TUNER

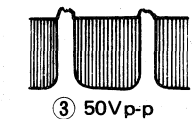
VHF TUNER TNV16908F1F



UHF TUNER TNV86906F1F



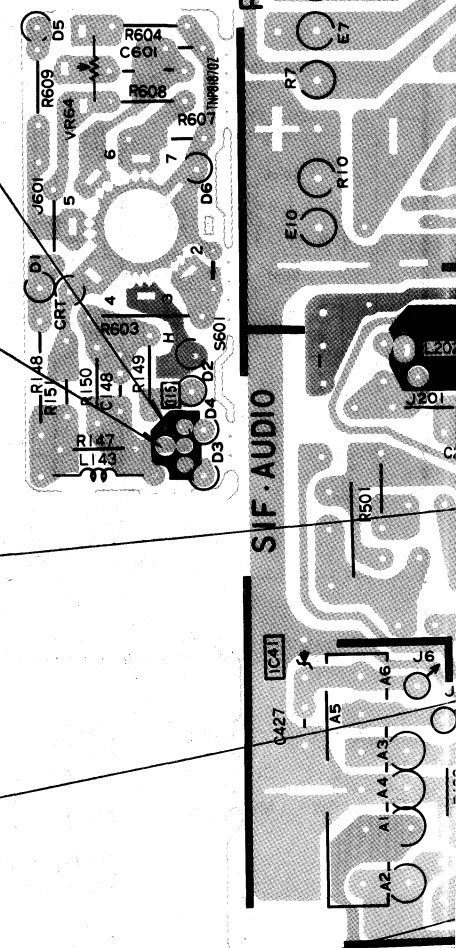
Q15	
C	65V
B	2.8V
E	2.2V



IC51		
1	9	2.1V
2	10	2.1V
3	11	10.8V
4	0V	12 7.8V
5	13	0V
6	4.2V	14 7.1V
7	4.3V	15
8	4.3V	16

IC12		
1	3.9V	5 11V
2	5.2V	6 11V
3	5.2V	7 3.3V
4	3.1V	8 0V

IC11		
1	3.7V	8 11.1V
2	3.7V	9 7.5V
3	0V	10 1.6V
4	0V	11 1.1V
5	0V	12 5.1V
6	2.3V	13 6.4V
7	11.1V	14 5.6V

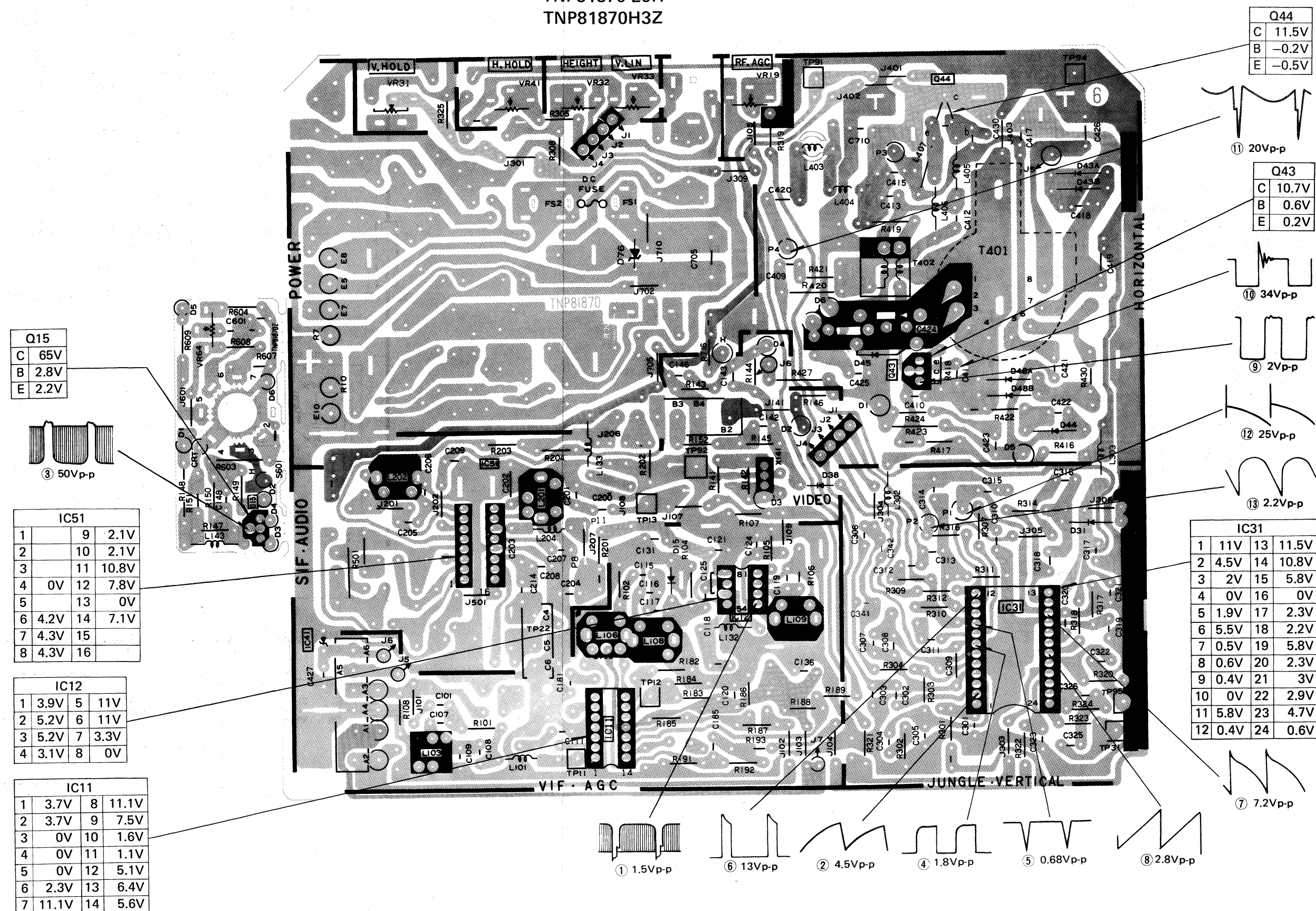


CONDUCTOR VIEWS

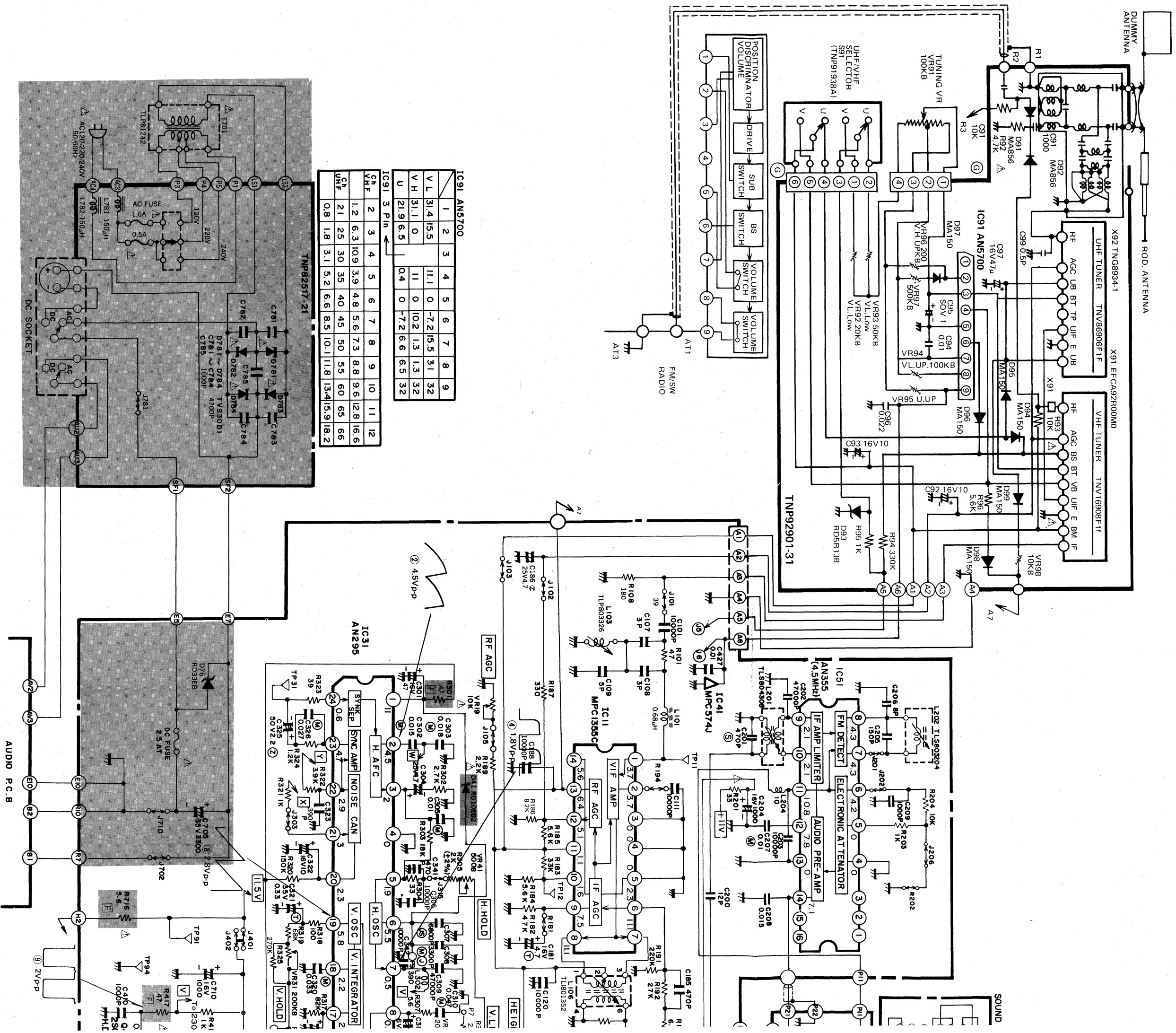
MAIN CIRCUIT BOARD

TNP81870-29H

TNP81870H3Z



SCHEMATIC DIAGRAM FOR MODEL TR-1230



NOTE

1. RESISTOR

All resistors are carbon 1/4W resistor, unless otherwise noted the following marks.
Unit of resistance is OHM (Ω), (K=1,000, M=1,000,000)

- \square : Solid resistor
- \square : Wire wound resistor
- \square : Metal oxide resistor
- \square : Fuse resistor
- \square : Thermistor

2. CAPACITOR

All capacitors are ceramic 50V capacitor, unless otherwise noted the following marks.
Unit of capacitance is μ F, unless otherwise noted.

- \textcircled{M} : Polyester capacitor
- \textcircled{S} : Polystyrene capacitor
- $\textcircled{+}$: Electrolytic capacitor

3. COIL

Unit of inductance is μ H.

4. TEST POINT

- ∇ : Test point position

5. VOLTAGE MEASUREMENT

Voltage is measured by a volt ohm meter with DC 500K OHM/V receiving normal signal, when all controls are set to the maximum position.

6. Number in red circle indi

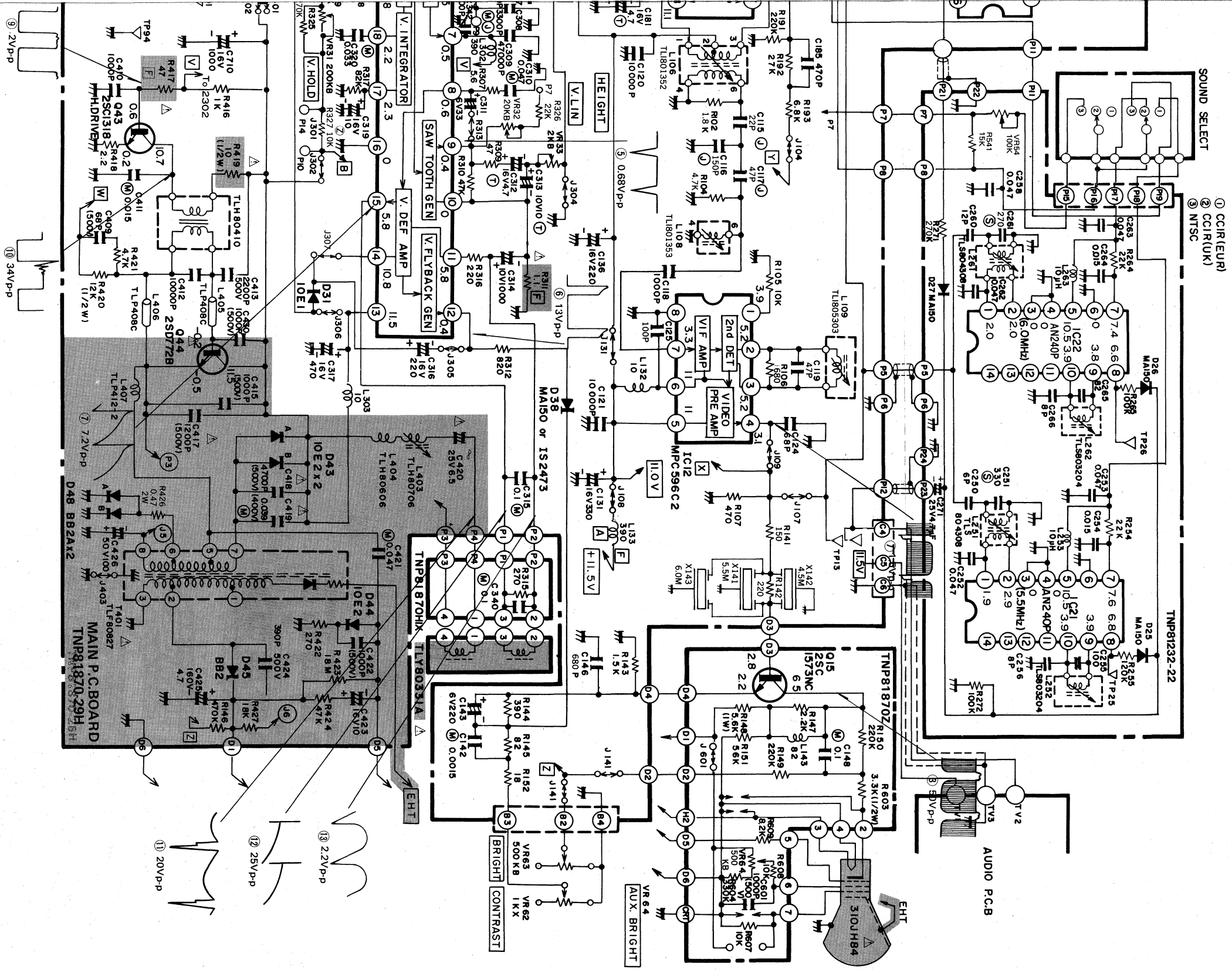
7. When arrow mark (∇) is shown

8. When schematic diagram with dotted line (---) is shown

9. This schematic diagram is

R-1230X (CHASSIS MODEL No. 12B01-A/E) (CHASSIS FAMILY No. 12B01)

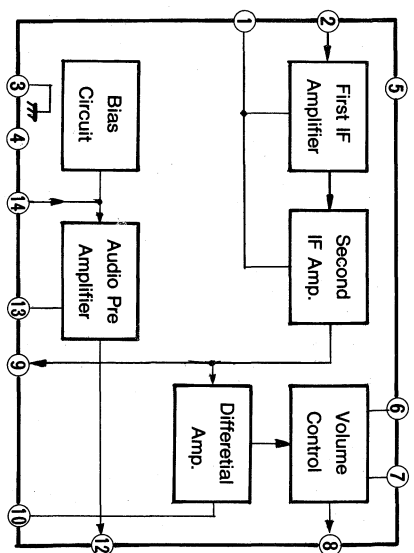
TRANSISTOR BASE INFORMATION			
	2SA564	2SC1318	
	2SB621ANC	2SC1359	
	2SC644	2SC1383	
	2SC828	2SC1573NC	
	2SC1686		
	2SC1687		
	2SC2348A		
	2SC1226		
	2SB761		
	2SC1983		
	2SD772B		
	2SC288A		
	2SC2360		



TRANSFORMER TERMINAL INFORMATION

TOP VIEW		BOTTOM VIEW	
03	40	03	40
02		02	
01	60	01	60

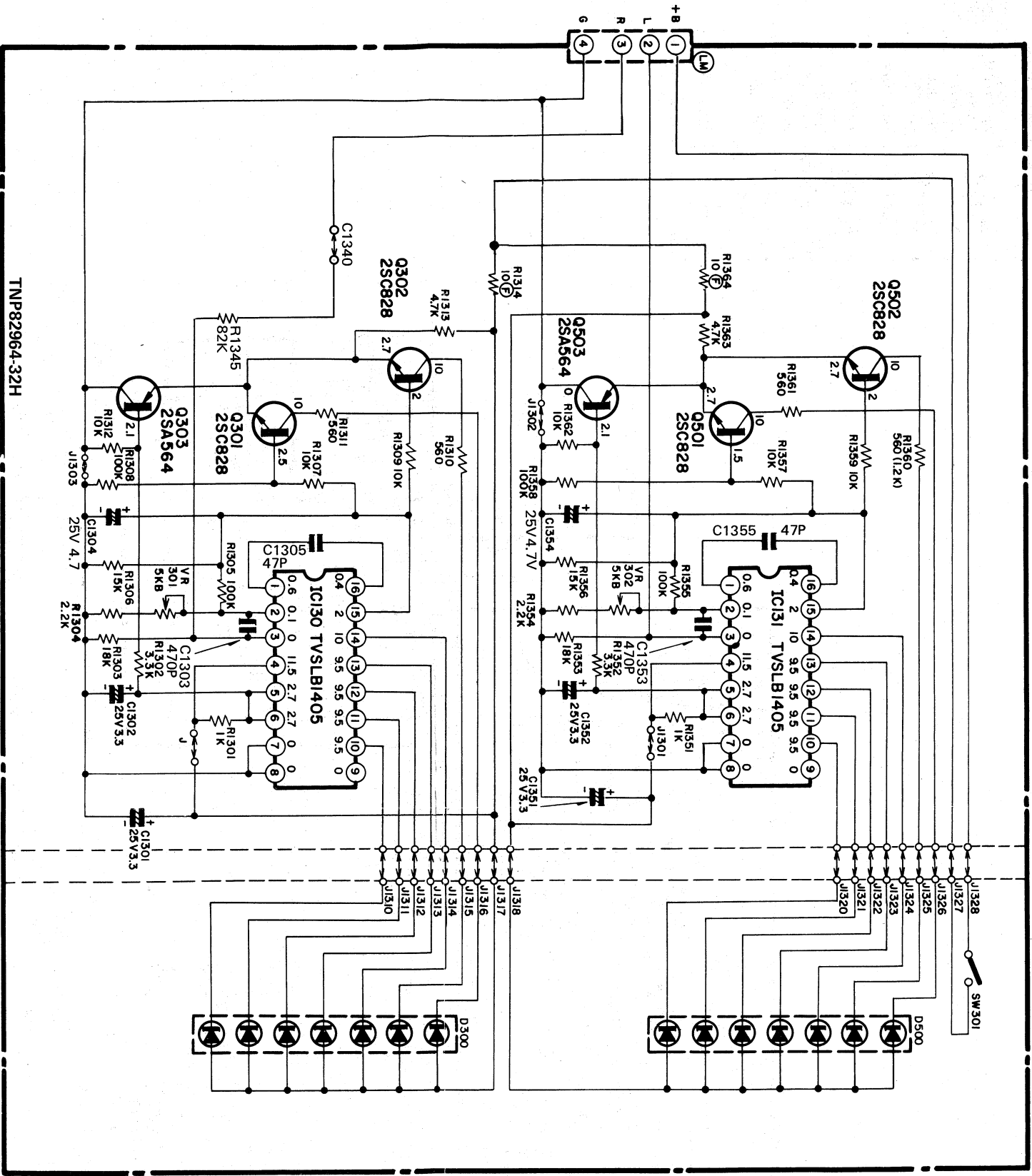
IC 21, IC 22 AN240P



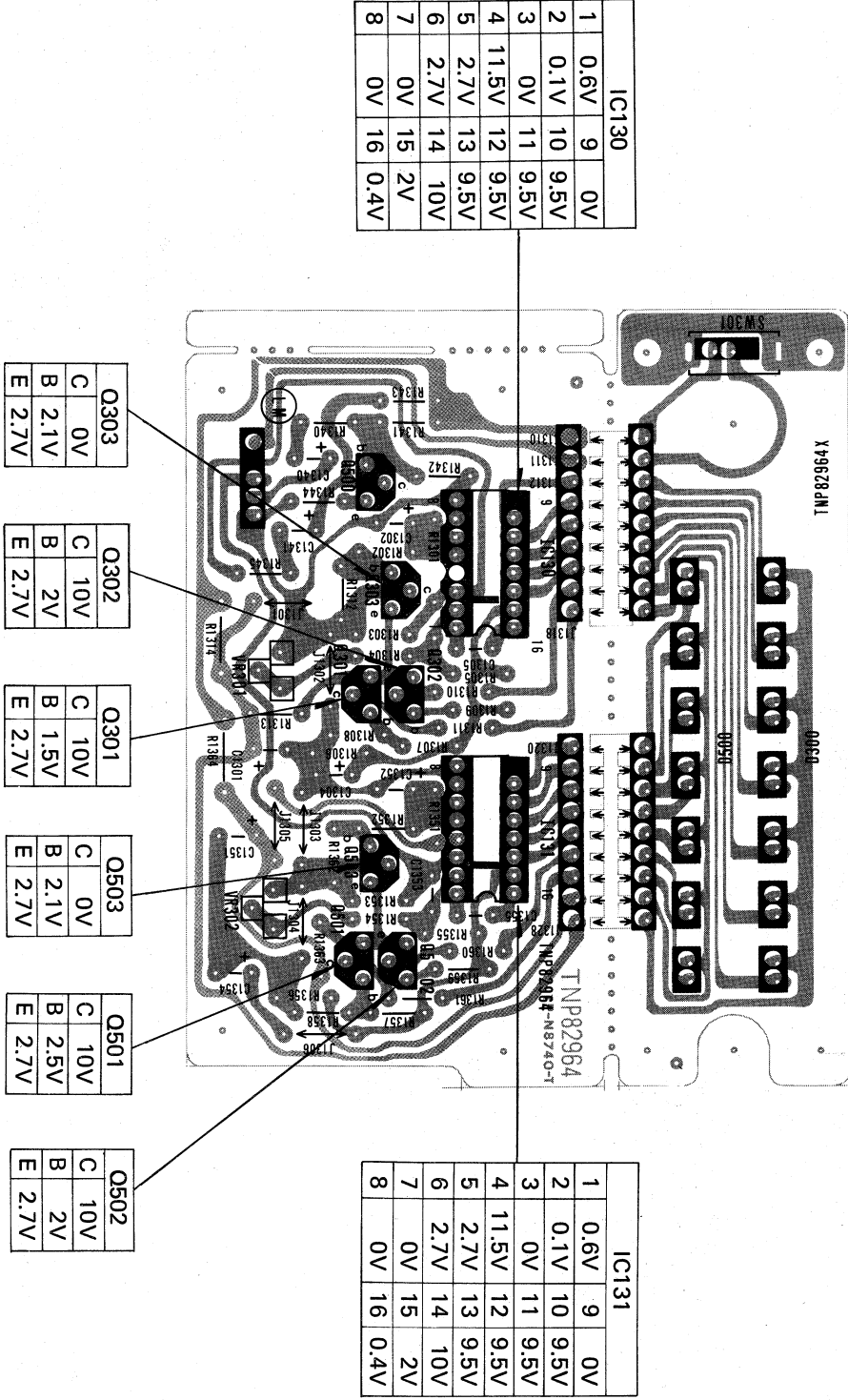
number in red circle indicates waveform number.
An arrow mark (V) is found, connection is easily found along with the direction of an arrow.
A schematic diagram of a board is described in more than two places, they are encircled in dotted line (---).
A schematic diagram is the latest at the time of printing and subject to change without notice.

IMPORTANT SAFETY NOTICE
THE COMPONENTS IDENTIFIED BY SHADING AND THE INTERNATIONAL SYMBOL ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THOSE CRITICAL COMPONENTS.

SCHEMATIC DIAGRAM FOR LED METER



LED METER CIRCUIT BOARD
TNP82964-32H



IC130		
1	0.6V	9 0V
2	0.1V	10 9.5V
3	0V	11 9.5V
4	11.5V	12 9.5V
5	2.7V	13 9.5V
6	2.7V	14 10V
7	0V	15 2V
8	0V	16 0.4V

IC131		
1	0.6V	9 0V
2	0.1V	10 9.5V
3	0V	11 9.5V
4	11.5V	12 9.5V
5	2.7V	13 9.5V
6	2.7V	14 10V
7	0V	15 2V
8	0V	16 0.4V

Q303		
C	0V	
B	2.1V	
E	2.7V	

Q302		
C	10V	
B	2V	
E	2.7V	

Q301		
C	10V	
B	1.5V	
E	2.7V	

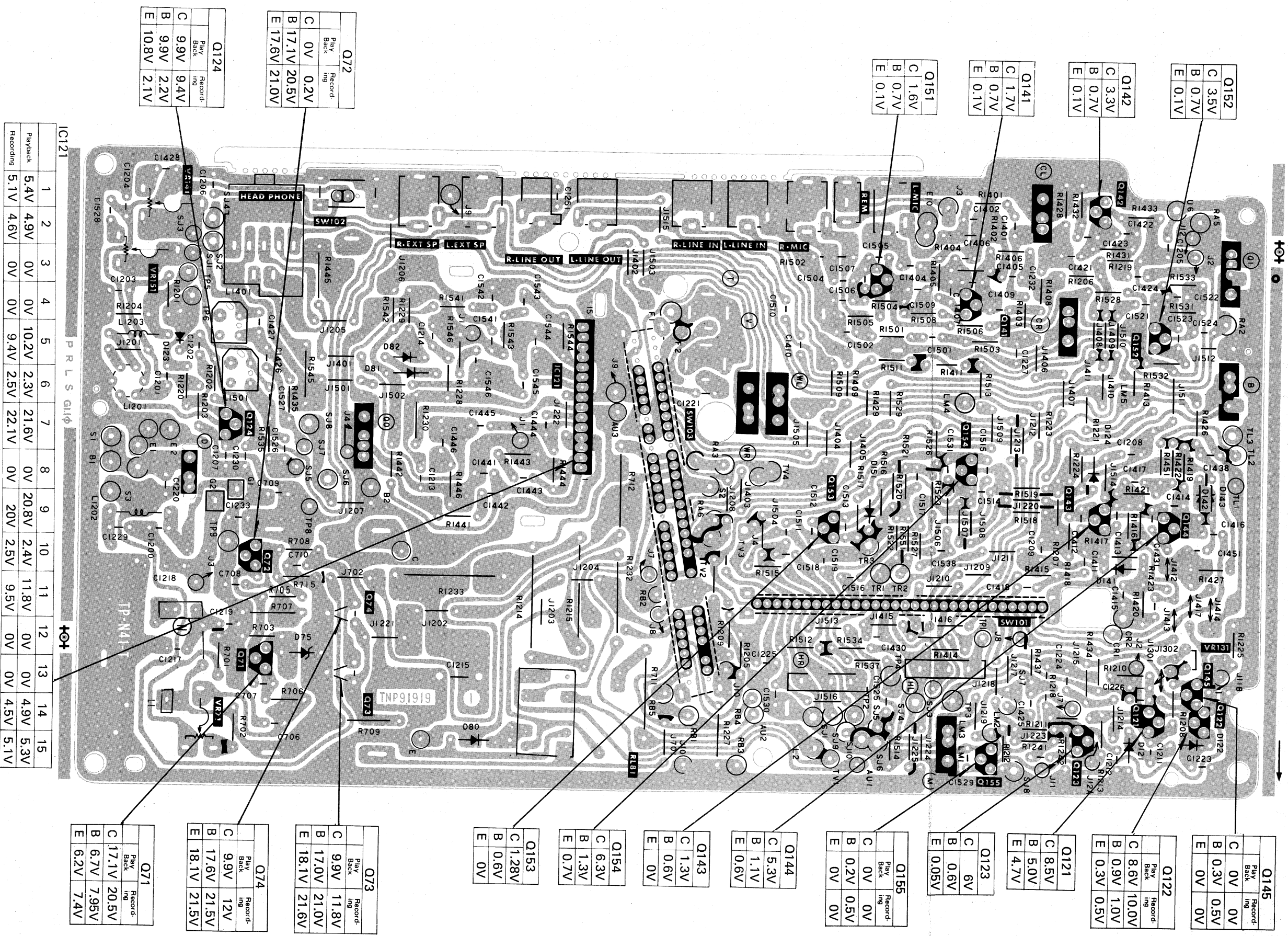
Q503		
C	0V	
B	2.1V	
E	2.7V	

Q501		
C	10V	
B	2.5V	
E	2.7V	

Q502		
C	10V	
B	2V	
E	2.7V	

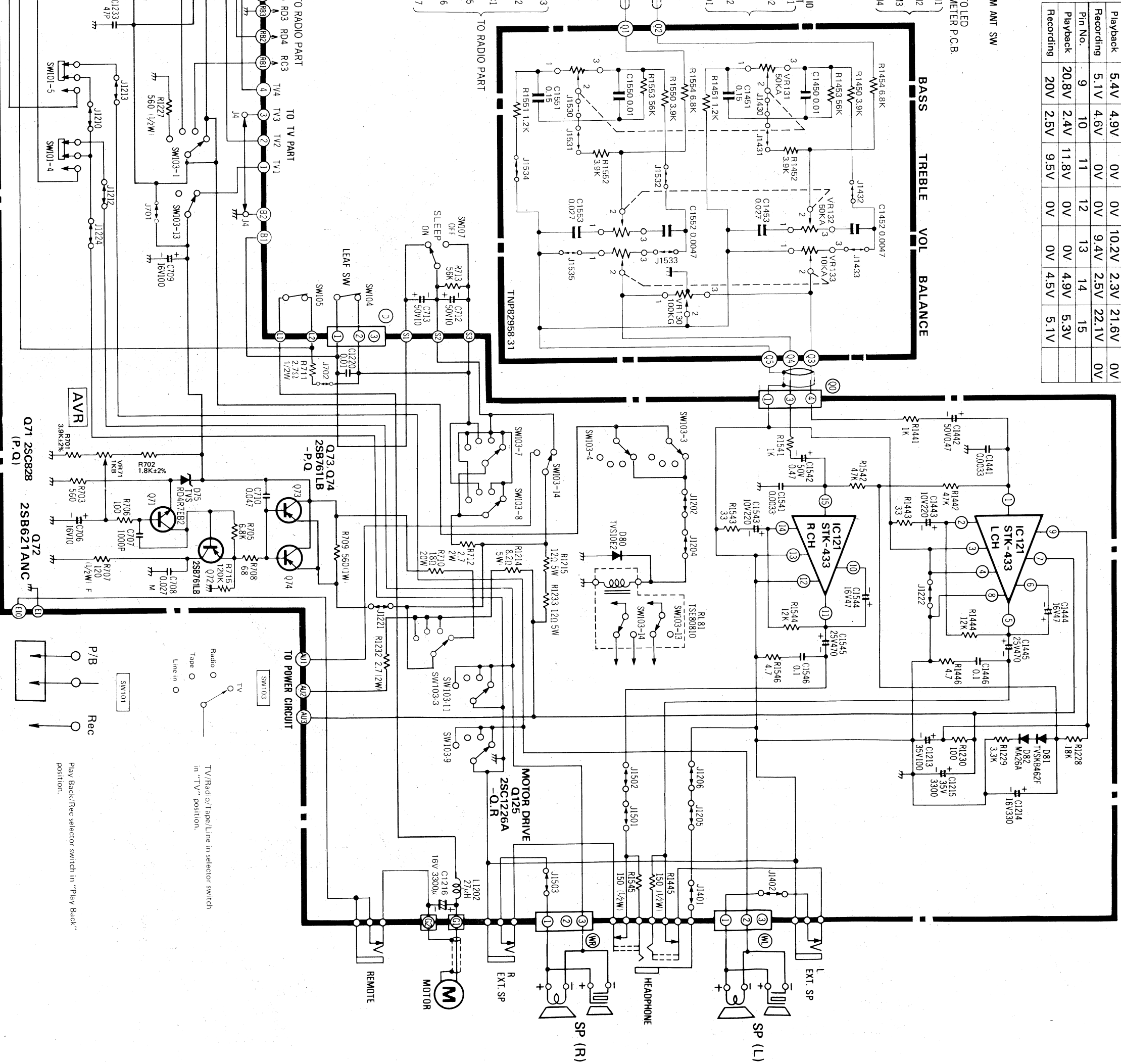
AUDIO CIRCUIT BOARD

TNP91919-21

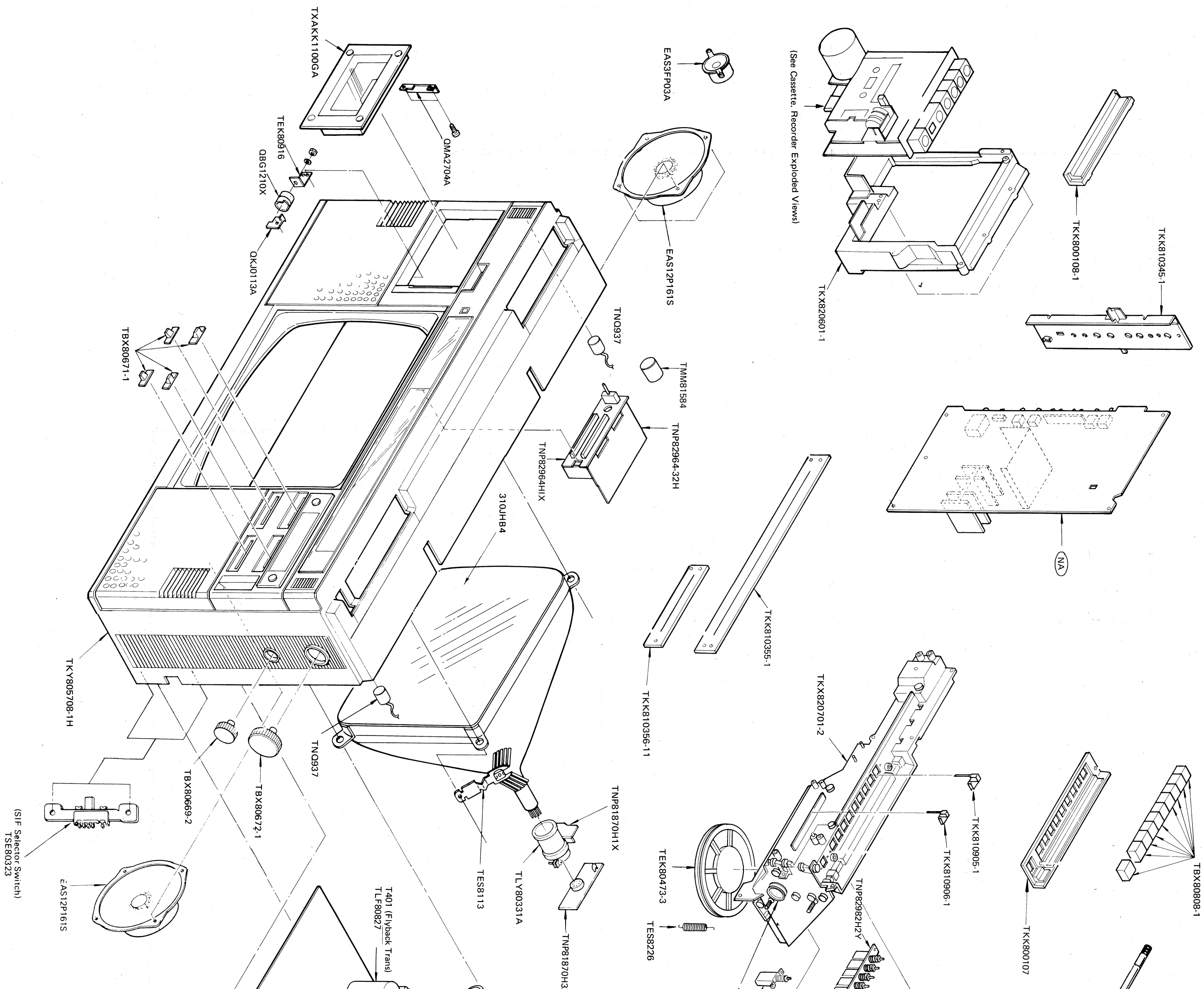


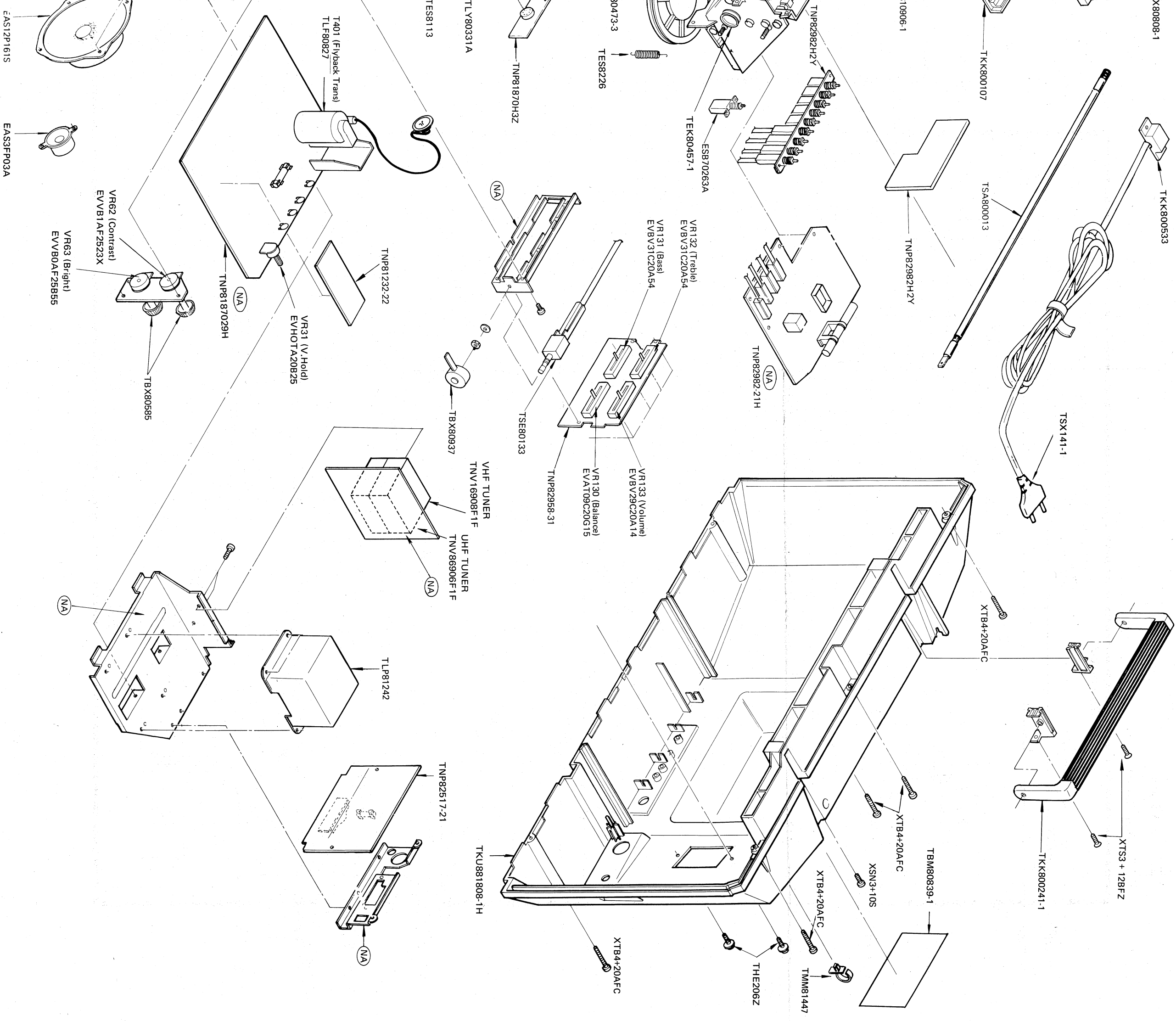
GRAM FOR AUDIO

Pin No.	1	2	3	4	5	6	7	8
Playback	5.4V	4.9V	0V	0V	10.2V	2.3V	21.6V	0V
Recording	5.1V	4.6V	0V	0V	9.4V	2.5V	22.1V	0V
Pin No.	9	10	11	12	13	14	15	
Playback	20.8V	2.4V	11.8V	0V	0V	4.9V	5.3V	
Recording	20V	2.5V	9.5V	0V	0V	4.5V	5.1V	



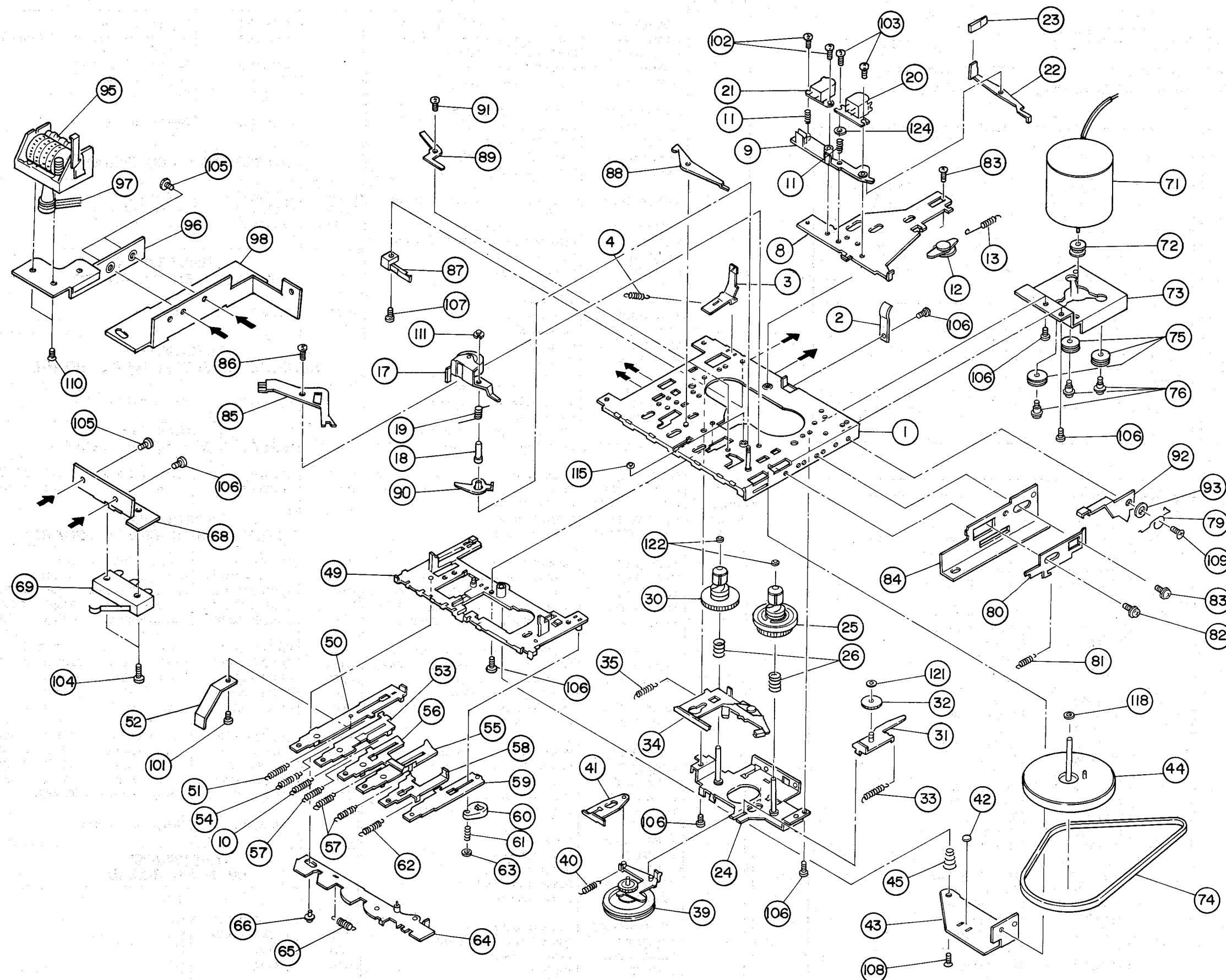
Q1	Q122	Q123	Q124	Q141	Q142	Q143	Q144	Q145	Q151	Q152	Q153	Q154	Q155
Play Back	Record ing		Play Back	Record ing				Play Back					Play Back
8.6V	10.0V	6V	9.9V	9.4V	1.7V	3.3V	1.3V	0V	1.6V	3.5V	1.28V	6.3V	0V
0.9V	1.0V	0.6V	9.9V	2.2V	0.7V	0.7V	0.6V	0.3V	0.5V	0.7V	0.6V	1.3V	0.2V
0.3V	0.5V	0.05V	10.8V	2.1V	0.1V	0.1V	0V	0V	0.1V	0.1V	0V	0.7V	0V





NOTE: Parts or Components marked with (NA) and unlisted are not available as a replacement parts.

CASSETTE RECORDER EXPLODED VIEWS



CASSETTE MECHANISM REPLACEMENT PARTS LIST

Note: (1) (NA) Mark: Non available Parts.
(2) SMQ Part: TSD Supply Parts.

Ref. No.	Part No.	Description
1	(NA)	Chassis Ass'y
2	SMQ3944	Pack Spring
3	SMQ3892	Record Safety Lever (with Spring)
4	(NA)	Record Safety Lever Spring
5	SMQ3900	Head Panel (with Sensing Plate, Sensing Cap)
6	SMQ3894	Head Base (with Head Spring)
7	SMQ3896	RC Spring
8	SMQ3898	Head Spring
9	SMQ3902	Take up Roller Ass'y (with Spring)
10	(NA)	Take up Roller Safety Spring
11	SMQ3904	Pinch Roller Ass'y (with Arm Sleeve Spring)
12	(NA)	Pinch Roller Arm Sleeve
13	(NA)	Pinch Roller Spring
14	TNQ8946	Play Record Head
15	TNQ8938	Erase Head
16	(NA)	Sensing Plate
17	(NA)	Sensing Cap
18	(NA)	Reel Rest Ass'y
19	SMQ3906	Take up Reel Ass'y
20	(NA)	Spring
21	SMQ3910	Supply Reel Ass'y
22	SMQ3916	F.F. Idler Arm Ass'y (with Center Gear)
23	(NA)	Center Gear
24	SMQ3918	F.F. Gear Plate Spring
25	(NA)	Main Plate Ass'y
26	SMQ3922	Main Plate Spring
27	(NA)	RF Clutch Ass'y
28	SMQ3926	RF Clutch Arm Spring
29	SMQ3928	Rwd Spring
30	SMQ2538	Flywheel Plate
31	(NA)	Flywheel Holder
32	SMQ3930	Flywheel Capstan
33	SMQ3932	Spring
34	(NA)	Push Button Base
35	SMQ3956	Record Button Lever Ass'y
36	SMQ3958	Record Button Lever Spring
37	TES8191	Record Spring (Storer)
38	SMQ3960	Play Button Lever Ass'y
39	SMQ3962	Play Button Lever Spring
40	SMQ3964	F.F. Button Lever Ass'y
41	SMQ3966	Rwd Button Lever Ass'y
42	SMQ3968	Button Lever Spring
43	TUX80558	Stop Button Lever
44	SMQ3972	Pause Button Lever Ass'y
45	SMQ2444	Pause Lever
46	SMQ3976	Pause Lever Spring
47	SMQ3974	Pause Button Lever Spring
48	SMQ3978	Pause Lever Stopper
49	(NA)	Push Button Actuator Ass'y
50	SMQ3940	Push Button Actuator Spring
51	(NA)	Actuator Shaft (B)
52	(NA)	Switch Bracket
53	TSE80607	Micro Switch
54	MMT3SF2BJ	Motor
55	TNQ8948	Motor Pulley
56	(NA)	Motor Bracket
57	TMM82514	Main Belt
58	SMQ1834	Motor Rubber
59	SMQ1908	Special Screw (S)
60	TES8245	Eject Kick Lever Spring (H)
61	TUX80564	Eject Slide Lever
62	TES8246	Eject Slide Lever Spring (V)
63	SMQ3952	Eject Special Screw
64	SMQ3950	Special Screw
65	TUX80547	Eject Bracket
66	SMQ3982	Arm Lever
67	SMQ3984	Arm Lever Special Screw
68	TSE80916	Reef Switch
69	(NA)	RC Kick Lever
70	(NA)	Center Lever
71	(NA)	Arm Lever (A)
72	SMQ3984	Special Screw
73	TUX80565	Eject Kick Lever
74	(NA)	Eject Kick Lever Coller
75	TNQ8939-1	Counter
76	(NA)	Counter Bracket
77	TMM82515	Counter Belt
78	(NA)	Side Bracket (L)
79	XSN2+4	Screw (M2 x 4)
80	XSN2+8	Screw (M2 x 8)
81	XSN2+7	Screw (M2 x 7)
82	XSN2+10	Screw (M2 x 10)
83	XSN26+5	Screw (M2.6 x 5)
84	XSN26+4	Screw (M2.6 x 4)
85	XSN26+5	Screw (M2.6 x 5)
86	XSN26+12	Screw (M2.6 x 12)
87	XSS26+8	Screw (M2.6 x 8)
88	XSS3+6S	Screw (M3 x 6)
89	XUC2FT	E. Ring
90	SMQ1402	Nylon Washer (1.8 x 5 x 10.3)
91	SMQ3934	Nylon Washer (2.05 x 4 x 10.5)
92	XWE12	Washer (1.2 x 3 x 10.25)
93	SMQ3914	Washer (1.6 x 3.8 x 10.3)
94	XWE2	Washer (2.1 x 5 x 10.4)

REPLACEMENT PARTS LIST

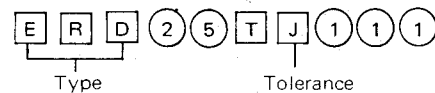
□ Important Safety Notice

Components identified by the International symbol have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

Note: TNP81870-29H (MAIN P.C.BOARD), TNP91919-21 (AUDIO.P.C.BOARD), TNP92901-31 (TUNER P.C. BOARD) and TNP82982-22H (RADIO P.C. BOARD) are not available as a complete printed circuit board.

Resistor Numbering System

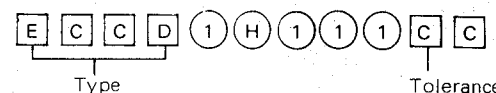
Example:



Symbol	Type	Symbol	Tolerance
ERD	Carbon Film	F	±1%
ERC	Solid	J	±5%
ERG	Metal Oxide Film	K	±10%
TRF	Non Flame	M	±20%
		G	±2%

Capactor Numbering System

Example:



Symbol	Type	Symbol	Tolerance
ECCD	Temperature Compensating Ceramic	C	$\pm 0.25\text{pF}$
ECKD	High Dielectric Constant Ceramic	D	$\pm 0.5\text{pF}$
ECQM	Polyester	F	$\pm 1\text{pF}$
ECEA ECET	Electrolytic	J	$\pm 5\%$
ECSF ECSZ TCSZ	Tantalum	K	$\pm 10\%$
ECFW	Magnetic Semiconductor	P	$+100\% -0\%$
ECQS	Styrol	Z	$+80\% -20\%$

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
CABINET AND CHASSIS PART					
	TKY805708-1H	Front Cabinet Ass'y		TBX80669-2	TV Tuning Knob
	TKU881808-1H	Rear Cover Ass'y		TBX80937-1	Knob TV/Radio Tape/Line Selector
	TKK800533	Cord Holder		TBX80671-1	Slide Knob
	TKK800108-1	Cassette Knob Dish		TBX80585	Rear Knob
	TKK810345-1	Line Terminal Board		TBX80949-1	Cassette Knob (A)
	TKK809384-1	TV Indicator Plate (With Front Cabinet)		TBX80950-1	Cassette Knob (B)
	TKK810915	Rive (With Front Cabinet)		TBX80951	Cassette Knob (C)
	TKK810902-2	TV Transparency Plate (With Front Cabinet)		TEK80457-1	TV Pulley
	TKK800241-3	Handle Complete		TEK80473-3	Radio Pulley
	TKK800107-1	Radio Knob Dish		TEK80916	Damper
	TKK810355-1	Radio Indicator		TEK80201	Roller (Big)
	TKK810356-11	TV Indicator		TEK80202	Roller (Small)
	TKK810903	Radio Reflection Plate		TEK80438	Shaft
	TKK810905-1	Radio Dial Guide		TEK80439	Radio Tuning Shaft
	TKK810906-1	TV Dial Guide		TEK80446	Roller Shaft
	TKK810916	TV Reflection Plate		TEK80491	TV Tuning Shaft
	TXAKK11200GA	Cassette Cover Complete		TES8113	Spring (CRT)
	TKX810701	Cassette Cover Holder		TES8191	Spring
	TKX820601-1	Cassette Bracket		TES8226	Coil Spring
	TKX820701-2	Radio Bracket		TMM81447	Cord Hook
	TKP8055033	Chassis Cover		TMM81584	Microphone Rubber
	TBM80839-1	Model Plate	△	XBA1C05NS5	Fuse (AC) 0.5A
	TBX80808-1	Push Knob	△	XBA1C10NS5	Fuse (AC) 1A
	TBX80672-1	Radio Tuning Knob	△	310JHB4	Picture Tube
			△	TLP81242	Power Trans.
			△	TLY80331A	Deflection Yoke

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
	TNP81870H3Z TNP81870H1X TNP82517-21 TNP91919-21 TNP82958-31	Picture Tube Socket P.C. Board Ass'y Deflection Yoke P.C. Board Ass'y Power P.C. Board Ass'y Audio P.C. Board Ass'y Tone P.C. Board Ass'y		TQB811587 TQB810587 TQB62996 TOE616 TQD8118155 TJS898200	Fun Bag TR1230X (Instruction) Book TR1230X (In Fun Bag) SS Seet (In Fun Bag) Bag (In Fun Bag) Warrnty Card (In Fun Bag) Pulg (In Fun Bag)
	TNP82964-32H TNP82964H1X TNP92901-31 TNP82982-22H TNP82982H1X	Led Meter P.C. Board Ass'y Led P.C. Board Ass'y Tuner P.C. Board Ass'y Radio P.C. Board Ass'y Stereo Led P.C. Board Ass'y	TNP82964H1X LED P.C.BOARD		
	TNP82982H2Y TNP81232-22 TNQ8940A EAS12P161S EAS3FP03A	8-Range Selector Switch P.C. Board Ass'y Sub SIF P.C. Board Ass'y Cassette Ass'y (Non Available Parts) Speaker (Woofer) Speaker (Tweeter)	D300 D500 SW301	LN07201PF LN07201PF TSE80328	7-Range Led Meter 7-Range Led Meter Led On-Off Switch
	TNQ937 TSA800013 TSX141-1 TSX8365 ESB70263A	Microphone Rod Antenna Power Cord Car Cord Power Switch	TNP82982H1X STEREO LED P.C. BOARD		
	TSE80332 TSE80427 TSE80428 TSE80133 ECEA1HS010	Sound IF Selector Switch MW/SW/FM Selector Switch LW Selector Switch TV/Radio/Tape/Line Function Switch Electrolytic 1μF 50V	D106	LN28RP	Stereo Led
	TSE80332 TSE80427 TSE80428 TSE80133 ECEA1HS010	Sound IF Selector Switch MW/SW/FM Selector Switch LW Selector Switch TV/Radio/Tape/Line Function Switch Electrolytic 1μF 50V	TNP82982H2Y 8-RANGE SELECTOR SW P.C. BOARD		
	TSE80332 TSE80427 TSE80428 TSE80133 ECEA1HS010	Sound IF Selector Switch MW/SW/FM Selector Switch LW Selector Switch TV/Radio/Tape/Line Function Switch Electrolytic 1μF 50V		TSE80422	8-Range Selection Switch
	TSE80332 TSE80427 TSE80428 TSE80133 ECEA1HS010	Sound IF Selector Switch MW/SW/FM Selector Switch LW Selector Switch TV/Radio/Tape/Line Function Switch Electrolytic 1μF 50V	TNP81870H1X DEFLECTION YOKE P.C.BOARD		
C712	ECEA1HS010	Electrolytic 1μF 50V	C340 R315	ECQM1H104JZ ERD25FJ271K	Polyester Capacitor 0.1μF J 50V Carbon Resistor 270Ω J ¼W
C713 R713 VR62 VR63 VR91	ERD25FJ563K EVBV1AF2523X EVBV0AF25B55 EVHBJA095B15	Carbon 56KΩ J ¼W Contrast Control Bright Control Tuning Control	TNP81870H3Z PICTURE TUBE SOCKET P.C.BOARD		
	TJC80328-1 TXAJT3P226 TXAJT3P228 TXAJT3P268 TXAJT3P230	Antenna Terminal 3P Mini Connector Ass'y (Sleep Sw) 3P Mini Connector Ass'y (Microphone) 3P Mini Connector Ass'y (Microphone) 3P Mini Connector Ass'y (Speaker)	Q15 L143 C148 C601 R147	2SC1573NC TLU820K106C ECQM1H104JZ ECKD2H102KB2 ERD25FJ222K	Transistor (Video Output) Peaking Coil 82μH Polyester Capacitor 0.1μF J 50V Ceramic Capacity 1000pF K 500V Carbon Resistor 2.2KΩ J ¼W
	TXAJT3P231 TXAJTX5P061 TXAJT3P248	3P Mini Connector Ass'y (Speaker) 5P Mini Connector Ass'y (SIF Switch) 3P Mini Connector Ass'y (Contrast Bright VR)	R148 R149 R150 R151 R603	ERG1ANJ562 ERD25FJ224K ERD25FJ224K ERD25FJ563K ERC12GJ332	Metal Oxide Resistor 5.6KΩ J ¼W Carbon Resistor 220KΩ J ¼W Carbon Resistor 220KΩ J ¼W Carbon Resistor 56KΩ J ¼W Solid Resistor 3.3KΩ J ½W
	TXAJTC4P252 TUW81940	4P Mini Connector Ass'y (VR91 Tuning) Antenna Bracket	R604 R607 R608 R609 VR64	ERD25FJ334K ERD25FJ103K ERD25FJ103K ERD25FJ822K EVLS0JA00B55	Carbon Resistor 330KΩ J ¼W Carbon Resistor 10KΩ J ¼W Carbon Resistor 10KΩ J ¼W Carbon Resistor 8.2KΩ J ¼W Sub. Bright Control 500KΩB
	TUW81950-3 TUW81382 TUX80992B TUX80988-3C TUW80601-2	Power Bracket (Non Available Parts) Control Bracket (Non Available Parts) Cassette Cover Bracket CRT Earth Bracket (SIF Selector) Switch Bracket	TJS25640V		Picture Tube Socket
	XTB4+20AFZ THE399-2 THN2967P XTB4+10AFN XTB4+35A	Screw (Rear Cover) Screw (CRT) Nut (Indicator) Screw (Tone Pwb) Screw (Audio)	TNP81870-29H MAIN P.C. BOARD		
	XTV3+10AFN TPC821011 TXAPD31200 TPE814017	Screw (Led Pwb) (Outer) Carton TR1230X Filler Complete Set Cover	I. C.		
	XTV3+10AFN TPC821011 TXAPD31200 TPE814017	Screw (Led Pwb) (Outer) Carton TR1230X Filler Complete Set Cover	IC11 IC12 IC31 IC51	TVSMP C1355C TVSMP C596C2 AN295 AN355	I.C. I.C. I.C. I.C.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
IC41	TVSMP574J	I.C.	C143	ECEA0JS221	Electrolytic 220 μ F 6.3V
TRANSISTORS			C146	ECKD1H681KB9	Ceramic 680pF K 50V
Q43	2SC1318	Transistor	C181	ECSF10E10Z	Tantal 4.7 μ F 16V
Q44	2SD772BLB	Transistor	C185	ECKD1H471KB2	Ceramic
DIODES			C186	ECEA25Z4R7	Electrolytic 4.7 μ F 25V
D31	TVS10E1	Diode	C188	ECKD1H103PF2	Ceramic 0.01 μ F P 50V
D38	MA150	Diode	C200	ECCD1H120J	Ceramic 12pF J 50V
D43A	TVS10E2	Diode	C201	ECQS1471JWT	Styrol 470pF J 100V
D43B	TVS10E2	Diode	C202	ECKD1H473ZF	Ceramic 0.047 μ F Z 50V
D41	TVSRD6R2EB2	Diode	C203	ECKD1H103PF2	Ceramic 0.01 μ F P 50V
D44	TVS10E2	Diode	C204	ECEA1CS102	Electrolytic 1000 μ F 16V
D45	TVS3DL2	Diode	C205	ECCD1H151JP	Ceramic 150pF J 50V
D48A	TVS3DL2A	Diode	C206	ECCD1H080CC	Ceramic 7pF C 50V
D48B	TVS3DL2A	Diode	C207	ECQM1H103JZ	Polyester 0.01 μ F J 50V
D76	TVSRD33EB	Diode	C208	ECQM1H153JZ	Polyester 0.015 μ F J 50V
COILS & TRANSFORMERS			C209	ECKD1H102KB2	Ceramic 1000pF K 50V
L101	TLUR68M106C	Peaking Coil 0.68 μ H	C301	ECEA1CS470	Electrolytic 47 μ F 16V
L103	TLI803326	Sound Trap Coil	C302	ECQM1H153JZ	Polyester 0.015 μ F J 50V
L106	TLI801352	Video IF Trans.	C303	ECQM1H183JZ	Polyester 0.018 μ F J 50V
L108	TLI801353	Video IF Trans.	C304	ECEA1ES4R7	Electrolytic 4.7 μ F 25V
L109	TLI805303	Video IF Trans.	C305	ECQM1H103JZ	Polyester 0.01 μ F J 50V
L132	TUU100K106C	Peaking Coil 10 μ H	C306	ECKD1H103PF2	Ceramic 0.01 μ F P 50V
L133	TLU391K106C	Peaking Coil 390 μ H	C307	ECQS1682JWT	Styrol 6800pF J 100V
L201	TLS804308	Sound-IF Input Coil	C308	ECQM05332JZ	Polyester 3300pF J 50V
L202	TLS803204	Sound Det. Trans.	C309	ECKD1H473ZF	Ceramic 0.047 μ F Z 50V
L204	TLU100K106C	Peaking Coil 10 μ H	C310	ECQM1H473JZ	Polyester 0.047 μ F J 50V
L302	TLU391K106C	Peaking Coil 390 μ H	C311	ECEA0JS330	Electrolytic 33 μ F 6.3V
L303	TLU100K106C	Peaking Coil 10 μ H	C312	ECSF16E4R7Y	Tantal 4.7 μ F 16V
L403	TLH80706	Horiz. Width Coil	C313	ECSZ10EF22N	Tantal 10 μ F 16V
L404	TLH80606	Horiz. Lin. Coil	C314	ECEA1AS102	Electrolytic 1000 μ F 10V
L405	TLP408	Choke Coil	C315	ECQM1H104JZ	Styrol 0.1 μ F J 50V
L406	TLP408	Choke Coil	C316	ECEA1CS221	Electrolytic 220 μ F 16V
L407	TLP412-2	Choke Coil	C317	ECEA1CS471	Electrolytic 470 μ F 16V
T401	TLF80827	Flyback Trans.	C319	ECEA16Z10E	Electrolytic 10 μ F 16V
T402	TLH80410	Horiz. Drive Trans.	C320	ECQM1H333JZ	Polyester 0.033 μ F J 50V
CAPACITORS			C321	TCSZ35EFR33V	Tantal 0.33 μ F 35V
C101	ECKD1H103PF2	Ceramic 0.01 μ F P 50V	C322	ECEA1CS100	Electrolytic 10 μ F 16V
C107	ECCD1H030CT	Ceramic 3pF C 50V	C323	ECKD1H471KB2	Ceramic 470pF K 50V
C108	ECCD1H030CT	Ceramic 3pF C 50V	C325	ECEA1HS2R2	Electrolytic 2.2 μ F 50V
C109	ECCD1H040CT	Ceramic 4pF C 50V	C326	ECQM1H273JZ	Polyester 0.027 μ F J 50V
C111	ECKD1H103PF2	Ceramic 0.01 μ F P 50V	C341	ECKD1H471KB2	Ceramic 470pF K 50V
C115	ECCD1H220JC2	Ceramic 18pF J 50V	C342	ECKD1H103PF2	Ceramic 0.01 μ F P 50V
C116	ECCD1H151JC2	Ceramic 270pF J 50V	C409	ECCD2H680K	Ceramic 68pF K 500V
C117	ECCD1H470J	Ceramic 39pF J 50V	C410	ECKD1H102KB2	Ceramic 1000pF K 50V
C118	ECKD1H102KB2	Ceramic 1000pF K 50V	C411	ECQM1H153JZ	Polyester 0.015 μ F J 50V
C119	ECCD1H470J	Ceramic 47pF J 50V	C412	ECKD1H103PF2	Ceramic 0.01 μ F P 50V
C120	ECKD1H103PF2	Ceramic 0.01 μ F P 50V	C413	ECKD2H222KB2	Ceramic 2200pF K 500V
C121	ECKD1H103PF2	Ceramic 0.01 μ F P 50V	C415	ECKD2H102KB2	Ceramic 1000pF K 500V
C124	ECCD1H680J	Ceramic 68pF J 50V	C417	ECKD2H122KB	Ceramic 1200pF K 500V
C125	ECCD1H101JP2	Ceramic 100pF J 50V	C418	ECKD2H472KB	Ceramic 2200pF K 500V
C131	ECEA1CS331	Electrolytic 330 μ F 16V	C419	ECQM4393KZ	Polyester 0.039 μ F K 400V
C136	ECEA1CS221	Electrolytic 220 μ F 16V	C420	ECEA25W6R5Z	Electrolytic 6.5 μ F 25V
C142	ECQM1H182JZ	Polyester 1800pF J 50V	C421	ECQM1H473JZ	Polyester 0.047 μ F J 50V
			C422	ECKD2H102KB2	Ceramic 1000pF K 500V
			C423	ECEA2CS100	Electrolytic 10 μ F 160V

Ref. No.	Part No.	Description					Ref. No.	Part No.	Description				
C424	ECKD2H391 KB9	Ceramic	390pF	K	500V		R325	ERD25FJ274K	Carbon	270K Ω	J	1/4W	
C425	ECEA2CS4R7	Electrolytic	4.7 μ F		160V		R326	ERD25FJ223K	Carbon	22K Ω	J	1/4W	
C426	ECEA50V100Y	Electrolytic	100 μ F		50V		R327	ERD25FJ103K	Carbon	10K Ω	J	1/4W	
C427	ECKD1H103PF2	Ceramic	0.01 μ F	P	50V		R416	ERD25FJ102K	Carbon	1K Ω	J	1/4W	
C430	ECKD2H102KB2	Ceramic	1000pF	K	500V		R417	ERD25FJ470K	Carbon	47 Ω	J	1/4W	
C705	ECET35R3325W	Electrolytic	3300 μ F		35V		R418	ERD25FJ2R2K	Carbon	2.2 Ω	J	1/4W	
C710	ECEA1CS102	Electrolytic	1000 μ F		16V		R419	ERQ12HJ100	Fuseble	10 Ω	J	1/4W	
RESISTORS							R420	ERC12GJ123	Solid	12K Ω	J	1/2W	
R101	ERD25FJ390K	Carbon	39 Ω	J	1/4W		R421	ERD25FJ472K	Carbon	4.7K Ω	J	1/4W	
R102	ERD25FJ103K	Carbon	1.8K Ω	J	1/4W		R422	ERD25FJ271K	Carbon	270 Ω	J	1/4W	
R104	ERD25FJ472K	Carbon	4.7K Ω	J	1/4W		R423	ERC12GJ186	Solid	18M Ω	J	1/2W	
R105	ERD25FJ103K	Carbon	10K Ω	J	1/4W		R424	ERD25FJ473K	Carbon	47K Ω	J	1/4W	
R106	ERD25FJ681K	Carbon	680 Ω	J	1/4W		R426	TRF2SKR47	Non Flame	0.47 Ω	K	2 W	
R107	ERD25FJ471K	Carbon	470 Ω	J	1/4W		R427	ERC12GJ183	Solid	18K Ω	J	1/2W	
R108	ERD25FJ820K	Carbon	82 Ω	J	1/4W		R716	ERD25FJ5R6K	Carbon	5.6 Ω	J	1/4W	
R141	ERD25FJ151K	Carbon	150 Ω	J	1/4W		J101	ERD25FJ390K	Carbon	39 Ω	J	1/4W	
R142	ERD25FJ221K	Carbon	220 Ω	J	1/4W		CONTROLS						
R143	ERD25FJ152K	Carbon	1.5K Ω	J	1/4W		VR19	EVTV0UA00B14	RF AGC	10K Ω B			
R144	ERD25FJ391K	Carbon	390 Ω	J	1/4W		VR31	EVH0TAS20B25	Vert. Hold	200K Ω B			
R145	ERD25FJ820K	Carbon	82 Ω	J	1/4W		VR32	EVTV0UA00B24	Vert. Height	20K Ω B			
R146	ERD25FJ474K	Carbon	470K Ω	J	1/4W		VR33	EVTV0UA00B23	Vert. Lin.	2K Ω B			
R152	ERD25FJ180K	Carbon	18 Ω	J	1/4W		VR41	EVTV0UA00B52	Horiz. Hold	500 Ω B			
R182	ERD25FJ473K	Carbon	47K Ω	J	1/4W		OTHER PARTS						
R183	ERD25FJ333K	Carbon	33K Ω	J	1/4W		X141	EFCS4R5MJ1	4.5MHz	Cerap			
R184	ERD25FJ562K	Carbon	5.6K Ω	J	1/4W		X142	EFCS5R5MJ1	5.5MHz	Cerap			
R185	ERD25FJ103K	Carbon	10K Ω	J	1/4W		X143	EFCS6R0MJ1	6.5MHz	Cerap			
R186	ERD25FJ822K	Carbon	8.2K Ω	J	1/4W		FS1,3	XBA1E25NS5	Fuse (DC) 2.5A				
R187	ERD25FJ331K	Carbon	330 Ω	J	1/4W			TJC305-1	Fuse Holder				
R189	ERD25FJ222K	Carbon	2.2K Ω	J	1/4W		TNP81232-22 SUB P.C. BOARD						
R191	ERD25FJ224K	Carbon	220K Ω	J	1/4W		I. C.						
R192	ERD25FJ273K	Carbon	27K Ω	J	1/4W		IC21	AN240PN	I.C.				
R193	ERD25FJ682K	Carbon	6.8K Ω	J	1/4W		IC22	AN240PN	I.C.				
R201	ERD25FJ330K	Carbon	33 Ω	J	1/4W		DIODE						
R203	ERD25FJ102K	Carbon	1K Ω	J	1/4W		D25	MA150	Diode				
R204	ERD25FJ103K	Carbon	10K Ω	J	1/4W		D26	MA150	Diode				
R301	ERD25FJ470K	Carbon	47 Ω	J	1/4W		D27	MA150	Diode				
R302	ERD25FJ272K	Carbon	2.7K Ω	J	1/4W		COILS						
R303	ERD25FJ183K	Carbon	18K Ω	J	1/4W		L251	TLS804308	Coil				
R304	ERD25FJ330K	Carbon	33 Ω	J	1/4W		L252	TLS803204	Coil				
R305	ERO25CKG2001	Metal	2K Ω	G	1/4W		L253	TLU100K106S	Peaking Coil				
R307	ERD25FJ5R6K	Carbon	5.6 Ω	J	1/4W		L261	TLS804308	Coil				
R309	ERD25FJ470K	Carbon	47 Ω	J	1/4W		L262	TLS803204	Coil				
R310	ERD25FJ472K	Carbon	4.7K Ω	J	1/4W		L263	TLU100K106S	Peaking Coil				
R311	ERD25FJ1R1K	Carbon	1.1 Ω	J	1/4W		CAPACITORS						
R312	ERD25FJ821K	Carbon	820 Ω	J	1/4W		C250	ECCD1H060CC	Ceramic	6pF	C	50V	
R316	ERD25FJ221K	Carbon	220 Ω	J	1/4W		C251	ECQS1331JWT	Styrol	130pF	J	100V	
R317	ERD25FJ823K	Carbon	82K Ω	J	1/4W		C252	ECKD1H473ZF2	Ceramic	0.047 μ F	Z	50V	
R318	ERD25FJ101K	Carbon	100 Ω	J	1/4W		C253	ECKD1H473ZF2	Ceramic	0.047 μ F	Z	50V	
R319	ERD25FJ683K	Carbon	68K Ω	J	1/4W		C254	ECQM1H153JZ	Polyestor	0.015 μ F	J	50V	
R320	ERD25FJ154K	Carbon	150K Ω	J	1/4W		C255	ECCD1H101JP2	Ceramic	100pF	J	50V	
R321	ERD25FJ102K	Carbon	1K Ω	J	1/4W								
R322	ERD25FJ392K	Carbon	3.9K Ω	J	1/4W								
R323	ERD25FJ390K	Carbon	39 Ω	J	1/4W								
R324	ERD25FJ122K	Carbon	1.2K Ω	J	1/4W								

Ref. No.	Part No.	Description				Ref. No.	Part No.	Description			
C256	ECCD1H080CC	Ceramic	8pF	C	50V	R1454	ERD25FJ682K	Carbon	6.8KΩ	J	¼W
C258	ECKD1H473ZF2	Ceramic	0.047μF	Z	50V	R1550	ERD25FJ392K	Carbon	3.9KΩ	J	¼W
C260	ECCD1H120JP	Ceramic	12pF	J	50V	R1551	ERD25FJ122K	Carbon	1.2KΩ	J	¼W
C261	ECQS1271JWT	Styrol	270pF	J	100V	R1552	ERD25FJ392K	Carbon	3.9KΩ	J	¼W
C262	ECKD1H473ZF2	Ceramic	0.047μF	Z	50V	R1553	ERD25FJ563K	Carbon	56KΩ	J	¼W
C263	ECKD1H473ZF2	Ceramic	0.047μF	Z	50V	R1554	ERD25FJ682K	Carbon	6.8KΩ	J	¼W
C264	ECQM1H153JZ	Polyestor	0.015μF	J	50V	CONTROLS					
C265	ECCD1H820JP2	Ceramic	82pF	J	50V	VR130	EVAT09C20G15	Balance	100KΩG		
C266	ECCD1H080CC	Ceramic	8pF	C	50V	VR131	EVBV31C20A54	Bass	50KΩA		
C271	ECEA1ES4R7	Electrolytic	4.7μF		25V	VR132	EVBV31C20A54	Treble	50KΩA		
RESISTORS						VR133	EVBV29C20A14	Volume	10KΩA		
R254	ERD25FJ223K	Carbon	22KΩ	J	¼W	OTHER PARTS					
R255	ERD25FJ124K	Carbon	120KΩ	J	¼W	TSE80132	TV/Radio/Tape/Line Function Switch				
R264	ERD25FJ223K	Carbon	22KΩ	J	¼W	TXAJT4P113A	4P Mini. Connector Ass'y				
R265	ERD25FJ104K	Carbon	100KΩ	J	¼W	TXAJT4P114A	4P Mini. Connector Ass'y				
R271	ERD25FJ124K	Carbon	120KΩ	J	¼W	TUW81383	Tone Volume Brucket (Non Available Part)				
R272	ERD25FJ104K	Carbon	100KΩ	J	¼W	TNP82964-32H LED METER P.C. BOARD					
R341	ERD25FJ153K	Carbon	15KΩ	J	¼W	I.C.					
VR34	EVTV0UA00B15	Control	500KΩB			IC130	TVSLB1405	I.C.			
	TJT8902A	1P Socket				IC131	TVSLB1405	I.C.			
TNP82517-21 POWER P.C. BOARD						TRANSISTORS					
D781	△ TVS30D1	Power Rectifier				Q301	2SC828AR	Transistor			
D782	△ TVS30D1	Power Rectifier				Q302	2SC828AR	Transistor			
D783	△ TVS30D1	Power Rectifier				Q303	2SA564AR	Transistor			
D784	△ TVS30D1	Power Rectifier				Q501	2SC828AR	Transistor			
C781	ECFWE104KDY	Ceramic Capacitor	0.1μF	K	50V	Q502	2SC828AR	Transistor			
C782	ECFWE104KDY	Ceramic Capacitor	0.1μF	K	50V	Q503	2SA564AR	Transistor			
C783	ECFWE104KDY	Ceramic Capacitor	0.1μF	K	50V	C1301	ECEA1ES3R3	Electrolytic	3.3μF		25V
C784	ECFWE104KDY	Ceramic Capacitor	0.1μF	K	50V	C1302	ECEA1ES3R3	Electrolytic	3.3μF		25V
C785	ECQM1H103JZ	Polyester Capacitor	0.1μF	K	50V	C1303	ECKD1H471KB2	Ceramic	470pF	K	50V
FS1~4	TJC3316	Fuse Holder				C1304	ECEA1ES4R7	Electrolytic	4.7μF		25V
AU	TJS868250	3P Mini. Connector Plug				C1305	ECCD1H470K	Ceramic	47pF	K	50V
	TJS828050	DC Socket				C1351	ECEA1ES3R3	Electrolytic	3.3μF		25V
	TUW81948-1	Power Bracket (Non Available Parts)				C1352	ECEA1ES3R3	Electrolytic	3.3μF		25V
	TSE80103-8	Switch				C1353	ECKD1H471KB2	Ceramic	470pF	K	50V
L781,782	TLP80601	Coil Trans.				C1354	ECEA1ES4R7	Electrolytic	4.7μF		25V
TNP82958-31 TONE P.C. BOARD						C1355	ECCD1H470K	Ceramic	47pF	K	50V
CAPACITORS						RESISTORS					
C1450	ECQM1H103JZ	Polyester	0.01μF	J	50V	R1301	ERD10TJ102	Carbon	1KΩ	J	⅛W
C1451	ECQM1H154JZ	Polyester	0.15μF	J	50V	R1302	ERD10TJ332	Carbon	3.3KΩ	J	⅛W
C1452	ECQM1H472JZ	Polyester	4700pF	J	50V	R1303	ERD10TJ183	Carbon	18KΩ	J	⅛W
C1453	ECQM1H273JZ	Polyester	0.027μF	J	50V	R1304	ERD10TJ222	Carbon	2.2KΩ	J	⅛W
C1550	ECQM1H103JZ	Polyester	0.01μF	J	50V	R1305	ERD10TJ104	Carbon	100KΩ	J	⅛W
C1551	ECQM1H154JZ	Polyester	0.15μF	J	50V	R1306	ERD10TJ153	Carbon	15KΩ	J	⅛W
C1552	ECQM1H472JZ	Polyester	4700pF	J	50V	R1307	ERD10TJ103	Carbon	10KΩ	J	⅛W
C1553	ECQM1H273JZ	Polyester	0.027μF	J	50V	R1308	ERD10TJ104	Carbon	100KΩ	J	⅛W
RESISTORS						R1309	ERD10TJ103	Carbon	10KΩ	J	⅛W
R1450	ERD25FJ392K	Carbon	3.9KΩ	J	¼W	R1310	ERD10TJ561	Carbon	560Ω	J	⅛W
R1451	ERD25FJ122K	Carbon	1.2KΩ	J	¼W	R1311	ERD10TJ561	Carbon	560Ω	J	⅛W
R1452	ERD25FJ392K	Carbon	3.9KΩ	J	¼W	R1312	ERD10TJ103	Carbon	10KΩ	J	⅛W
R1453	ERD25FJ563K	Carbon	56KΩ	J	¼W						

Ref.No.		Part No.		Description				Ref.No.		Part No.		Description			
R1313		ERD10TJ472		Carbon	4.7KΩ	J	1/8 W	R96		ERD25FJ562K		Carbon	5.6KΩ	J	1/4 W
R1314		ERD25FJ100K		Carbon	10Ω	J	1/4 W	CONTROL							
R1345		ERD10TJ823		Carbon	82KΩ	J	1/8 W								
R1351		ERD10TJ102		Carbon	1KΩ	J	1/8 W								
R1352		ERD10TJ332		Carbon	3.3KΩ	J	1/8 W								
R1353		ERD10TJ183		Carbon	18KΩ	J	1/8 W								
R1354		ERD10TJ222		Carbon	2.2KΩ	J	1/8 W	VR92		EVNK0AA00B24		Control	20KΩB		
R1355		ERD10TJ104		Carbon	100KΩ	J	1/8 W	VR93		EVNK0AA00B54		Control	50KΩB		
R1356		ERD10TJ153		Carbon	15KΩ	J	1/8 W	VR94		EVNK0AA00B15		Control	100KΩB		
R1357		ERD10TJ103		Carbon	10KΩ	J	1/8 W	VR95		EVNK0AA00B15		Control	100KΩB		
								VR96		EVNK0AA0BB25		Control	100KΩB		
R1358		ERD10TJ104		Carbon	100KΩ	J	1/8 W	VR97		EVNK0AA0BB55		Control	500KΩB		
R1359		ERD10TJ103		Carbon	10KΩ	J	1/8 W	VR98		EVNK0AA0BB14		Control	10KΩB		
R1360		ERD10TJ561		Carbon	560Ω	J	1/8 W	OTHER PARTS							
R1361		ERD10TJ561		Carbon	560Ω	J	1/8 W								
R1362		ERD10TJ103		Carbon	10KΩ	J	1/8 W								
R1363		ERD10TJ472		Carbon	4.7KΩ	J	1/8 W	U	TJS868360		6P Socket Plug				
R1364		ERD25FJ100K		Carbon	10Ω	±5%	1/4 W	TU	TJS868330		4P Socket Plug				
OTHER PARTS								X91	EFC92R00M0		Ceramic Filter				
								X92	TNQ8934-1		U/V Separator				
									TXAJTN6P199		6P Connector Ass'y				
									TXAJTC3P535		4P Connector Ass'y				
TNP82982-22H RADIO P.C. BOARD															
I. C.															
VR301		EVNK0BA00B53		Led Meter Level Control 5KΩB				IC101	AN7218		FM IF AMP.				
VR302		EVNK0BA00B53		Led Meter Level Control 5KΩB				IC102	AN362		FM Multi				
LM		TJS868330		4P L-Type Mini. Connector Plug				TRANSISTORS							
TNP92901 TUNER P.C. BOARD															
TUNER															
IC91		TNV86906F1F		UHF Tuner											
D91		TNV16908F1F		VHF Tuner											
D92		AN5700		I.C.											
		MA856		Diode											
D93		TVSRD5R1JB3		Diode											
D94		MA150		Diode											
D95		MA150		Diode											
D96		MA150		Diode											
D97		MA150		Diode											
D98		MA150		Diode											
D99		MA150		Diode											
CAPACITOR															
C91		ECKD1H102KB2		Ceramic	1000pF	K	50V	DIODES							
C92		ECEA1CS100		Electrolytic	10μF		16V								
C93		ECEA1CS100		Electrolytic	10μF		16V								
C94		ECKD1H103KB2		Ceramic	0.01μF	K	50V								
C95		ECEA1HS010		Electrolytic	1μF		50V								
C96		ECKD1H223PF2		Ceramic	0.022μF	P	50V	COILS							
C97		ECEA1CS470		Electrolytic	47μF		16V								
C98		ECKD1H102KB2		Ceramic	1000pF	K	50V								
C99		TCCF1H0R5BR6		Ceramic	0.5pF		50V								
RESISTORS															
								L1002	TLR80208		FM OSC. Coil				
								L1003	RLQY75S5		Trap Coil				
								L1004	TLT331-999		Peaking Coil		330μH		
								L1005	TLT270-999		Peaking Coil		27μH		
L1081		TLQ393J106G		Peaking Coil		0.039H		TRANSFORMERS							
L1082		TLQ393J106G		Peaking Coil		0.039H									
L1101		RLQY75S5		Trap Coil											
L1102		TLR80123		Bar Antenna Coil											
L1103		ELA7S755C		SM RF Coil											
L1104		QL02M5		AM OSC. Coil											
L1105		RL02M14		SW1 OSC Coil											
L1106		ELL7E758C		SW2 OSC Coil											
TNP82982-22H RADIO P.C. BOARD															
T1001		RLI4M101		FM IF Trans.											
T1002		RLI4M504		FM DET. Trans.											

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
T1003 Δ	RLI4M506	FM DET. Trans.	C1107	ECCD1H271JC	Ceramic 270pF J 50V
T1101 Δ	RLI2M201	AM IF Trans.	C1108	ECCD1H151JC	Ceramic 150pF J 50V
T1102 Δ	RLI2M202	AM IF Trans.	C1109	ECCD1H150JC	Ceramic 15pF J 50V
T1103 Δ	RLI2M402	AM DET. Trans.	C1110	ECV1ZW10X53N	Variable
			C1111	ECV1ZW10X53N	Variable
CAPACITORS					
C1001	PVC22K20T1LG		C1112	ECQS1361JWT	Styrol 360pF J 100V
C1004	ECCD1H270JC2	Ceramic 27pF J 50V	C1113	ECCD1H070CC	Ceramic 7pF C 50V
C1005	ECKD1H103PF2	Ceramic 0.01μF P 50V	C1114	ECQS1472JWT	Styrol 4200pF J 100V
C1006	ECCD1H050CC	Ceramic 5pF C 50V	C1115	ECKD1H103PF2	Ceramic 0.01μF P 50V
C1007	ECCD1H180JC	Ceramic 18pF J 50V	C1116	ECKD1H223PF2	Ceramic 0.022μF P 50V
C1008	ECCD1H050CC	Ceramic 5pF C 50V	C1131	ECEA1AS471	Electrolytic 470μF 10V
C1009	ECCD1H390JC2	Ceramic 39pF J 50V	C1132	ECKD1H102KB2	Ceramic 1000pF K 50V
C1010	ECKD1H103KB2	Ceramic 0.01μF K 50V	C1133	ECEA1HS010	Electrolytic 1μF 50V
C1011	ECKD1H103PF2	Ceramic 0.01μF P 50V	C11134	ECEA1CS100	Electrolytic 10μF 16V
C1012	ECCD1H050CS	Ceramic 5pF C 50V	C1135	ECKD1H223PF2	Ceramic 0.022μF P 50V
C1013	ECCD1H080DS	Ceramic 8pF D 50V	C1136	ECKD1H103PF2	Ceramic 0.01μF P 50V
C1014	ECCD1H390JS	Ceramic 39pF J 50V	C1137	ECKD1H103PF2	Ceramic 0.01μF P 50V
C1015	ECCD1H120JS	Ceramic 12pF J 50V	C1138	ECKD1H223PF2	Ceramic 0.022μF P 50V
C1017	ECCD1H060CS	Ceramic 6pF C 50V	C1139	ECQM1H683JZ	Polyester 0.068μF J 50V
C1018	ECKD1H223PF2	Ceramic 0.022μF P 50V	C1140	ECCD1H271JC2	Ceramic 270pF J 50V
C1019	ECKD1H331KB	Ceramic 330pF K 50V	C1141	ECKD1H223PF2	Ceramic 0.022μF P 50V
C1020	ECKD1H103PF2	Ceramic 0.01μF P 50V	C1180	ECEA1AS101	Electrolytic 100μF 10V
C1050	ECKD1H102KB2	Ceramic 1000pF K 50V			
C1051	ECKD1H103PF2	Ceramic 0.01μF P 50V	RESISTORS		
C1052	ECKD1H223PF2	Ceramic 0.022μF P 50V	R1001	ERD10TJ104	Carbon 100KΩ J 1/8W
C1053	ECKD1H223PF2	Ceramic 0.022μF P 50V	R1002	ERD10TJ270	Carbon 27Ω J 1/8W
C1054	ECKD1H331KB	Ceramic 330pF K 50V	R1003	ERD10TJ122	Carbon 1.2KΩ J 1/8W
C1055	ECEA1ES4R7	Electrolytic 4.7μF 25V	R1004	ERD10TJ474	Carbon 470KΩ J 1/8W
C1056	ECCD1H271J	Ceramic 270pF J 50V	R1005	ERD10TJ471	Carbon 470Ω J 1/8W
C1057	ECCD1H271J	Ceramic 270pF J 50V	R1006	ERD10TJ751	Carbon 750Ω J 1/8W
C1059	ECEA1HSR47	Electrolytic 0.47μF 50V	R1007	ERD10TJ104	Carbon 100KΩ J 1/8W
C1060	ECEA1ES4R7	Electrolytic 4.7μF 25V	R1009	ERD10TJ122	Carbon 1.2KΩ J 1/8W
C1061	ECKD1H103PF2	Ceramic 0.01μF P 50V	R1010	ERD10TJ102	Carbon 1KΩ J 1/8W
C1062	ECKD1H103PF2	Ceramic 0.01μF P 50V	R1011	ERD10TJ104	Carbon 100KΩ J 1/8W
C1081	ECEA1CS330	Electrolytic 33μF 16V	R1012	ERD10TJ473	Carbon 47KΩ J 1/8W
C1083	ECQM1H153JZ	Polyester 0.015μF J 50V	R1051	ERD10TJ101	Carbon 100Ω J 1/8W
C1084	ECEA1ES4R7	Electrolytic 4.7μF 25V	R1052	ERD10TJ102	Carbon 1KΩ J 1/8W
C1085	ECQM1H182JZ	Polyester 1800pF J 50V	R1053	ERD10TJ470	Carbon 47Ω J 1/8W
C1086	ECQM1H153JZ	Polyester 0.015μF J 50V	R1054	ERD10TJ102	Carbon 1KΩ J 1/8W
C1087	ECEA1ES4R7	Electrolytic 4.7μF 25V	R1055	ERD10TJ102	Carbon 1KΩ J 1/8W
C1088	ECQM1H182JZ	Polyester 1800pF J 50V	R1056	ERD10TJ682	Carbon 6.8KΩ J 1/8W
C1089	ECFWD152KAY	Ceramic 1500pF K 25V	R1057	ERD10TJ822	Carbon 8.2KΩ J 1/8W
C1090	ECQM1H332JZ	Polyester 3300pF J 50V	R1058	ERD10TJ821	Carbon 820Ω J 1/8W
C1091	ECFWD152KAY	Ceramic 1500pF K 25V	R1059	ERD10TJ153	Carbon 15KΩ J 1/8W
C1092	ECQM1H332JZ	Polyester 3300pF J 50V	R1062	ERD10TJ102	Carbon 1KΩ J 1/8W
C1093	ECQS1331JWT	Styrol 330pF J 100V	R1063	ERD10TJ104	Carbon 100KΩ J 1/8W
C1094	ECEA50ZR22	Electrolytic 0.22μF 50V	R1081	ERD10TJ183	Carbon 18KΩ J 1/8W
C1095	ECEA50ZR47	Electrolytic 0.47μF 50V	R1082	ERD10TJ473	Carbon 47KΩ J 1/8W
C1096	ECEA1CS100	Electrolytic 10μF 16V	R1083	ERD10TJ823	Carbon 82KΩ J 1/8W
C1097	ECEA1HS010	Electrolytic 1μF 50V	R1084	ERD10TJ272	Carbon 2.7KΩ J 1/8W
C1098	ECQM1H473JZ	Polyester 0.047μF J 50V	R1085	ERD10TJ272	Carbon 2.7KΩ J 1/8W
C1100	ECCD1H040CC	Ceramic 4pF C 50V	R1086	ERD10TJ561	Carbon 560Ω J 1/8W
C1101	ECCD1H560JP	Ceramic 56pF J 50V	R1087	ERD10TJ682	Carbon 6.8KΩ J 1/8W
C1102	QCV2120	Trimmer	R1088	ERD10TJ332	Carbon 3.3KΩ J 1/8W
C1104	ECCD1H470JPN	Ceramic 47pF J 50V	R1090	ERD10TJ682	Carbon 6.8KΩ J 1/8W

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R1091	ERD10TJ332	Carbon 3.3K Ω J $\frac{1}{8}$ W	Q154	2SC828AR	Transistor
R1093	ERD10TJ273	Carbon 27K Ω J $\frac{1}{8}$ W	Q155	2SC828AR	Transistor
R1094	ERD10TJ102	Carbon 1K Ω J $\frac{1}{8}$ W	DIODES		
R1095	ERD10TJ682	Carbon 6.8K Ω J $\frac{1}{8}$ W	D75	TVSRD4R7EB	Diode
R1101	ERD10TJ270	Carbon 27 Ω J $\frac{1}{8}$ W	D78	TVS10E1	Diode
R1102	ERD10TJ391	Carbon 390 Ω J $\frac{1}{8}$ W	D80	TVS10E2	Diode
R1103	ERD10TJ103	Carbon 10K Ω J $\frac{1}{8}$ W	D81	TVSKB462F	Diode
R1104	ERD10TJ270	Carbon 27 Ω J $\frac{1}{8}$ W	D82	MA26	Diode
R1105	ERD10TJ330	Carbon 33 Ω J $\frac{1}{8}$ W	D121	MA150	Diode
R1130	ERD10TJ470	Carbon 47 Ω J $\frac{1}{8}$ W	D122	MA150	Diode
R1131	ERD10TJ473	Carbon 47K Ω J $\frac{1}{8}$ W	D123	TVSKB265A	Diode
R1132	ERD10TJ103	Carbon 10K Ω J $\frac{1}{8}$ W	D141	MA150	Diode
R1133	ERD10TJ682	Carbon 6.8K Ω J $\frac{1}{8}$ W	D151	MA150	Diode
R1134	ERD10TJ822	Carbon 8.2K Ω J $\frac{1}{8}$ W	COILS		
R1135	ERD10TJ153	Carbon 15K Ω J $\frac{1}{8}$ W	L1201	QLB0155	Oscillator Coil
R1180	ERD25FJ471K	Carbon 470 Ω J $\frac{1}{4}$ W	L1202	TLU270K106C	Peaking Coil
CONTROLS			L1203	TLU391K106C	Peaking Coil
VR101	EVNK4AA00B14	Freq. Adj. 10K Ω B	L1401	ELM7Q718A	Trap Coil
VR102	EVNK4AA00B53	Separation Adj. 5K Ω B	L1501	ELM7Q718A	Trap Coil
C-R COMBINATIONS			CAPACITORS		
X1001	TXCFF88108W	FM Band Pass Filter	C706	ECEA1CS100	Electrolytic 10 μ F 16V
X1002	TFCS10R7M-2	10.7MHz Cerap	C707	ECCD1H101JP2	Ceramic 100pF J 50V
OTHER PARTS			C708	ECQM1H273JZ	Polyester 0.027 μ F J 50V
S0	TSE80331	LW Selector Switch	C709	ECEA1CS101	Electrolytic 100 μ F 16V
S1	TSE80331	MW Selector Switch	C710	ECKD1H472KB2	Ceramic 4700pF K 50V
S2	TSE80331	SW Selector Switch	C1201	ECEA50ZR22	Electrolytic 0.22 μ F 50V
S3	TSE80331	FM Selector Switch	C1203	ECEA1CS101	Electrolytic 100 μ F 16V
P2,4	XAM64C120	Pilot Lamp	C1204	ECQM1H822JZ	Polyester 8200pF J 50V
P1,5	XAM64C260	Pilot Lamp	C1205	ECEA1CS331	Electrolytic 330 μ F 16V
AT,RC	TJS868250	3-P Mini. Connector Plug	C1206	ECQM1H102JZ	Polyester 1000pF J 50V
RD	TJS868270	5-P Mini. Connector Plug	C1207	ECCD1H101JP2	Ceramic 100pF J 50V
	TXAJT7P006A	7-P Mini. Connector Ass'y	C1208	ECEA1CS221	Electrolytic 220 μ F 16V
	TXAJTC6P200	6P Connector Ass'y	C1209	ECEA1AS101	Electrolytic 100 μ F 10V
TNP91919-21 AUDIO P.C. BOARD			C1210	ECQM1H472JZ	Polyester 4700pF J 50V
I. C.			C1211	ECEA1HS010	Electrolytic 1 μ F 50V
IC121	TVSSTK433	I.C.	C1213	ECEA1VS101	Electrolytic 100 μ F 35V
TRANSISTORS			C1214	ECEA1CS331	Electrolytic 330 μ F 16V
Q71	2SC828AR	Transistor	C1215	ECET35R332SW	Electrolytic 3300 μ F 35V
Q72	2SB621ARNC	Transistor	C1216	ECEA1CS332	Electrolytic 3300 μ F 16V
Q73	2SB761QLB	Transistor	C1217	ECEA1CS100	Electrolytic 10 μ F 16V
Q121	2SC828AR	Transistor	C1220	ECKD1H103KB2	Ceramic 0.01 μ F K 50V
Q122	2SC828AQ	Transistor	C1223	ECEA16Z10E	Electrolytic 10 μ F 16V
Q124	2SC1383R	Transistor	C1225	ECEA1AS221	Electrolytic 220 μ F 10V
Q141	2SC644S	Transistor	C1226	ECCD1H221J2	Ceramic 220pF J 50V
Q142	2SC828AR	Transistor	C1227	ECEA1ES4R7	Electrolytic 4.7 μ F 15V
Q143	2SC644S	Transistor	C1230	ECEA1CS100	Electrolytic 10 μ F 16V
Q144	2SC828AR	Transistor	C1232	ECEA1AS471	Electrolytic 470 μ F 10V
Q145	2SC828AR	Transistor	C1233	ECCD1H470JPN	Ceramic 47pF J 50V
Q151	2SC644S	Transistor	C1251	ECCD1H470JPN	Ceramic 47pF J 50V
Q152	2SC828AR	Transistor	C1401	ECEA50ZR22	Electrolytic 0.22 μ F 50V
Q153	2SC644S	Transistor	C1402	ECQM1H103JZ	Polyester 0.01 μ F J 50V
			C1404	ECEA50ZR47	Electrolytic 0.47 μ F 50V
			C1405	ECCD1H181JC	Ceramic 180pF J 50V
			C1406	ECCD1H820JP2	Ceramic 82pF J 50V

Ref.No.	Part No.	Description					Ref.No.	Part No.	Description				
C1407	ECCD1H101JP2	Ceramic	100pF	J	50V		C1541	ECQM1H332JZ	Polyester	3300pF	J	50V	
C1409	ECEA1ES3R3	Electrolytic	3.3μF		25V		C1542	ECEA50ZR47	Electrolytic	0.47μF		50V	
C1410	ECEA1CN330S	Electrolytic	33μF		16V		C1543	ECEA1AS221	Electrolytic	220μF		10V	
C1411	ECEA1ES3R3	Electrolytic	3.3μF		25V		C1544	ECEA1CS470	Electrolytic	47μF		16V	
C1412	ECCD1H271JC	Ceramic	270pF	J	50V		C1545	ECEA1ES471	Electrolytic	470μF		25V	
C1413	ECCD1H181JC	Ceramic	180pF	J	50V		C1546	ECQM1H104JZ	Polyester	0.1μF	J	50V	
C1414	ECCD1H560JP	Ceramic	56pF	J	50V		RESISTORS						
C1415	ECEA0JS330	Electrolytic	33μF		6.3V								
C1416	ECEA1ES3R3	Electrolytic	3.3μF		25V		R701	ERO25CKG3901	Metal	3.9KΩ	J	¼W	
C1417	ECQM1H153JZ	Polyester	0.015μF	J	50V		R702	ERO25CKG3801	Metal	1.8KΩ	J	¼W	
C1418	ECQM1H332JZ	Polyester	3300pF	J	50V		R703	ERD25FJ561K	Carbon	560Ω	J	¼W	
C1421	ECEA1ES4R7	Electrolytic	4.7μF		25V		R705	ERD25FJ682K	Carbon	6.8KΩ	J	¼W	
C1423	ECCD1H151JP	Ceramic	150pF	J	50V		R706	ERD25FJ101K	Carbon	100Ω	J	¼W	
C1424	ECEA1CSV00	Electrolytic	10μF		16V		R707	ERC12GJ121	Solid	120Ω	J	¼W	
C1425	ECEA1ES3R3	Electrolytic	3.3μF		25V		R708	ERD25FJ680K	Carbon	68Ω	J	¼W	
C1426	ECQM1H332JZ	Polyester	3300pF	J	50V		R709	ERG1ANJ561	Metal Oxide	56Ω	J	1W	
C1427	ECQS1821JWT	Styrol	820pF	J	100V		R711A	ERD50FJ2R7	Carbon	27Ω	J	¼W	
C1428	ECQM1H102JZ	Polyester	1000pF	J	50V		R712	ERQ2CJ2R7	Fuseble	2.7Ω	J	2W	
C1429	ECEA0JS330	Electrolytic	33μF		6.3V		R715	ERD15FJ124K	Carbon	120KΩ	J	¼W	
C1430	ECQM1H152JZ	Polyester	1500pF	J	50V		R1201	ERD25FJ562K	Carbon	5.6KΩ	J	¼W	
C1431	ECCD1H470JPN	Ceramic	47pF	J	50V		R1202	ERD25FJ8R2	Carbon	8.2Ω	J	¼W	
C1438	ECEA1CS100	Electrolytic	10μF		16V		R1203	ERD25FJ101K	Carbon	100Ω	J	¼W	
C1441	ECQM1H332JZ	Polyester	3300pF	J	50V		R1204	ERD25FJ1R0K	Carbon	1Ω	J	¼W	
C1442	ECEA50ZR47	Electrolytic	0.47μF		50V		R1205	ERD25FJ102K	Carbon	1KΩ	J	¼W	
C1443	ECEA1AS221	Electrolytic	220μF		10V		R1206	ERD25FJ562K	Carbon	5.6KΩ	J	¼W	
C1444	ECEA1CS470	Electrolytic	47μF		16V		R1207	ERD25FJ103K	Carbon	10KΩ	J	¼W	
C1445	ECEA1ES471	Electrolytic	470μF		25V		R1208	ERD25FJ472K	Carbon	4.7KΩ	J	¼W	
C1446	ECQM1H104JZ	Polyester	0.1μF	J	50V		R1209	ERD25FJ150K	Carbon	15Ω	J	¼W	
C1501	ECEA50ZR22	Electrolytic	0.22μF		50V		R1210	ERD25FJ684K	Carbon	680KΩ	J	¼W	
C1502	ECQM1H103JZ	Polyester	0.47μF	J	50V		R1214	TRF5SK8R2	Non Flame	8.2Ω	K	5W	
C1504	ECEA50ZR47	Electrolytic	0.47μF		50V			TRF5SJ120	Non Flame	12Ω	J	5W	
C1505	ECCD1H181JC	Ceramic	180pF	J	50V		R1217	ERD25FJ122K	Carbon	1.2KΩ	J	¼W	
C1506	ECCD1H820JP2	Ceramic	82pF	J	50V		R1219	ERD25FJ681K	Carbon	680Ω	J	¼W	
C1507	ECCD1H101JP2	Ceramic	100pF	J	50V		R1220	ERD25FJ271K	Carbon	270Ω	J	¼W	
C1509	ECEA1ES3R3	Electrolytic	3.3μF		25V		R1221	ERD25FJ102K	Carbon	1KΩ	J	¼W	
C1510	ECEA1CN330S	Electrolytic	33μF		16V		R1222	ERD25FJ473K	Carbon	470KΩ	J	¼W	
C1511	ECEA1ES3R3	Electrolytic	3.3μF		25V		R1223	ERD25FJ820K	Carbon	82Ω	J	¼W	
C1512	ECCD1H271JC	Ceramic	270pF	J	50V		R1224	ERD25FJ561K	Carbon	560Ω	J	¼W	
C1513	ECCD1H181JC	Ceramic	180pF	J	50V		R1225	ERD25FJ105K	Carbon	1MΩ	J	¼W	
C1514	ECCD1H560JP	Ceramic	56pF	J	50V		R1226	ERD25FJ122K	Carbon	1.2KΩ	J	¼W	
C1515	ECEA0JS330	Electrolytic	33μF		6.3V		R1227	ERC12GJ561	Solid	560Ω	J	¼W	
C1516	ECEA1ES3R3	Electrolytic	3.3μF		25V		R1228	ERD25FJ183K	Carbon	18KΩ	J	¼W	
C1517	ECQM1H153JZ	Polyester	0.015μF	J	50V		R1229	ERD25FJ332K	Carbon	3.3KΩ	J	¼W	
C1518	ECQM1H332JZ	Polyester	3300μF	J	50V		R1230	ERD25FJ101K	Carbon	100Ω	J	¼W	
C1521	ECEA1ES4R7	Electrolytic	4.7μF		25V		R1232	TRF2SK2R7	Non Flame	2.7Ω	K	2W	
C1523	ECCD1H151JP	Ceramic	150pF	J	50V		R1233	TRF5SJ120	Non Flame	12Ω	J	5W	
C1524	ECEA1CS100	Electrolytic	10μF		16V		R1241	ERD25TJ823	Carbon	82KΩ	J	¼W	
C1525	ECEA1ES3R3	Electrolytic	3.3μF		25V		R1401	ERD25FJ153K	Carbon	15KΩ	J	¼W	
C1526	ECQM1H332JZ	Polyester	3300μF	J	50V		R1403	ERD25FJ222K	Carbon	2.2KΩ	J	¼W	
C1527	ECQS1821JWT	Styrol		J			R1404	ERD25FJ684K	Carbon	680KΩ	J	¼W	
C1528	ECQM1H102JZ	Polyester	1000pF	J	50V		R1405	ERD25FJ151K	Carbon	150Ω	J	¼W	
C1529	ECKD1H102KB2	Ceramic	1000pF	J	50V		R1406	ERD25FJ103K	Carbon	10KΩ	J	¼W	
C1530	ECQM1H152JZ	Polyester	1500pF	J	50V		R1408	ERD25FJ273K	Carbon	27KΩ	J	¼W	
C1531	ECCD1H470JPN	Ceramic	47pF	J	50V								
C1538	ECEA1CS100	Electrolytic	10μF		16V								

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R1409	ERD25FJ104K	Carbon 100K Ω J $\frac{1}{4}$ W	R1533	ERD25FJ103K	Carbon 10K Ω J $\frac{1}{4}$ W
R1411	ERD25FJ222K	Carbon 22K Ω J $\frac{1}{4}$ W	R1534	ERD25FJ154K	Carbon 150K Ω J $\frac{1}{4}$ W
R1412	ERD25FJ100K	Carbon 10 Ω J $\frac{1}{4}$ W	R1535	ERD25FJ822K	Carbon 8.2K Ω J $\frac{1}{4}$ W
R1413	ERD25FJ473K	Carbon 47K Ω J $\frac{1}{4}$ W	R1537	ERD25FJ123K	Carbon 12K Ω J $\frac{1}{4}$ W
R1414	ERD25FJ102K	Carbon 1K Ω J $\frac{1}{4}$ W	R1541	ERD25FJ102K	Carbon 1K Ω J $\frac{1}{4}$ W
R1415	ERD25FJ102K	Carbon 1K Ω J $\frac{1}{4}$ W	R1542	ERD25FJ473K	Carbon 47K Ω J $\frac{1}{4}$ W
R1416	ERD25FJ101K	Carbon 100 Ω J $\frac{1}{4}$ W	R1543	ERD25FJ330K	Carbon 33 Ω J $\frac{1}{4}$ W
R1417	ERD25FJ224K	Carbon 220K Ω J $\frac{1}{4}$ W	R1544	ERD25FJ123K	Carbon 12K Ω J $\frac{1}{4}$ W
R1418	ERD25FJ473K	Carbon 47K Ω J $\frac{1}{4}$ W	R1545	ERD50FJ151	Carbon 150 Ω J $\frac{1}{2}$ W
R1419	ERD25FJ682K	Carbon 6.8K Ω J $\frac{1}{4}$ W	R1546	ERD25FJ4R7K	Carbon 4.7 Ω J $\frac{1}{4}$ W
R1420	ERD25FJ102K	Carbon 1K Ω J $\frac{1}{4}$ W	R1551	ERD25FJ153K	Carbon 15K Ω J $\frac{1}{4}$ W
R1421	ERD25FJ334K	Carbon 330K Ω J $\frac{1}{4}$ W	JC121	QJA0156	Socket (Remote)
R1422	ERD25FJ822K	Carbon 8.2K Ω J $\frac{1}{4}$ W	TC122	TJS848090	Socket (R/L Aux. Audio)
R1423	ERD25FJ223K	Carbon 22K Ω J $\frac{1}{4}$ W	JC123	XCJ6P21E-A	Hwad Phone Socket
R1426	ERD25FJ153K	Carbon 15K Ω J $\frac{1}{4}$ W	JC141	QJA0154	Socket (L Mic)
R1427	ERD25FJ562K	Carbon 5.6K Ω J $\frac{1}{4}$ W	JC142	QJA0154	Socket (L Ext. Sp)
R1429	ERD25FJ103K	Carbon 10K Ω J $\frac{1}{4}$ W	JC151	QJA0154	Socket (R. Mic)
R1431	ERD25FJ824K	Carbon 820K Ω J $\frac{1}{4}$ W	JC152	QJA0154	Socket (R. Ext. Sp)
R1432	ERD25FJ101K	Carbon 100 Ω J $\frac{1}{4}$ W	Q0	TJS168040	Socket
R1433	ERD25FJ103K	Carbon 10K Ω J $\frac{1}{4}$ W	Q1	TJS168040	Socket
R1434	ERD25FJ154K	Carbon 150K Ω J $\frac{1}{4}$ W	QJA1	TSE80136	Switch
R1435	ERD25FJ822K	Carbon 8.2K Ω J $\frac{1}{4}$ W	SW101	QSSA203T	Switch
R1437	ERD25FJ123K	Carbon 12K Ω J $\frac{1}{4}$ W	SW102	ESD1493	Switch
R1441	ERD25FJ102K	Carbon 1K Ω J $\frac{1}{4}$ W	SW103	TSE80130	Switch
R1442	ERD25FJ473K	Carbon 47K Ω J $\frac{1}{4}$ W	D.N	TJS868250	Socket
R1443	ERD25FJ330K	Carbon 33 Ω J $\frac{1}{4}$ W	WL	TJS868250	Socket
R1444	ERD25FJ123K	Carbon 12K Ω J $\frac{1}{4}$ W	WR	TJS868250	Socket
R1445	ERD50FJ151	Carbon 150 Ω J $\frac{1}{4}$ W	CL	TJS868250	Socket
R1446	ERD25FJ4R7K	Carbon 4.7 Ω J $\frac{1}{4}$ W	CR	TJS868250	Socket
R1451	ERD25FJ153K	Carbon 15K Ω J $\frac{1}{4}$ W	VR71	EVTS3MA00B13	Control 1K Ω B
R1501	ERD25FJ153K	Carbon 15K Ω J $\frac{1}{4}$ W	VR131	EVNK4AA00B13	Control 1K Ω B
R1503	ERD25FJ222K	Carbon 2.2K Ω J $\frac{1}{4}$ W	VR141	EVTS3AA00B15	Control 100K Ω B
R1504	ERD25FJ684K	Carbon 680K Ω J $\frac{1}{4}$ W	VR151	EVTS3AA00B15	Control 100K Ω B
R1505	ERD25FJ151K	Carbon 150 Ω J $\frac{1}{4}$ W		TJT8902A	1P Housing Socket
R1506	ERD25FJ103K	Carbon 10K Ω J $\frac{1}{4}$ W		TXAJT3P245	3P Connector Ass'y
R1508	ERD25FJ273K	Carbon 27K Ω J $\frac{1}{4}$ W		TXAJT3P246	3P Connector Ass'y
R1509	ERD25FJ104K	Carbon 100K Ω J $\frac{1}{4}$ W		TXAJT4P111A	4P Connector Ass'y
R1511	ERD25FJ222K	Carbon 2.2K Ω J $\frac{1}{4}$ W		TXAJT5P059	5P Connector Ass'y
R1512	ERD25FJ100K	Carbon 19 Ω J $\frac{1}{4}$ W		TXAJT7P005	7P Connector Ass'y
R1513	ERD25FJ473K	Carbon 47K Ω J $\frac{1}{4}$ W		TXAJT3P224A	3P Connector Ass'y
R1514	ERD25FJ102K	Carbon 1K Ω J $\frac{1}{4}$ W			
R1515	ERD25FJ102K	Carbon 1K Ω J $\frac{1}{4}$ W			
R1516	ERD25FJ101K	Carbon 100 Ω J $\frac{1}{4}$ W			
R1517	ERD25FJ224K	Carbon 220K Ω J $\frac{1}{4}$ W			
R1518	ERD25FJ473K	Carbon 47K Ω J $\frac{1}{4}$ W			
R1519	ERD25FJ682K	Carbon 6.8K Ω J $\frac{1}{4}$ W			
R1520	ERD25FJ102K	Carbon 1K Ω J $\frac{1}{4}$ W			
R1521	ERD25FJ334K	Carbon 330K Ω J $\frac{1}{4}$ W			
R1522	ERD25FJ822K	Carbon 8.2K Ω J $\frac{1}{4}$ W			
R1523	ERD25FJ223K	Carbon 22K Ω J $\frac{1}{4}$ W			
R1526	ERD25FJ153K	Carbon 15K Ω J $\frac{1}{4}$ W			
R1527	ERD25FJ562K	Carbon 5.6K Ω J $\frac{1}{4}$ W			
R1529	ERD25FJ103K	Carbon 10K Ω J $\frac{1}{4}$ W			
R1531	ERD25FJ824K	Carbon 820K Ω J $\frac{1}{4}$ W			
R1532	ERD25FJ101K	Carbon 100 Ω J $\frac{1}{4}$ W			